FAST

- 24 hours delivery service – order today, on its way tomorrow
- Sales & service hotline from 8:00 am to 6:00 pm

RELIABLE

- 2 years warranty

DIVERSE

- One-stop shopping: from force gauges through to hygrometer – everything from one supplier
- Quick as a flash, find the product you want with the „Measuring instruments Quick-Finder“ at www.kern-sohn.com

SAUTER Service guarantee:

„We at SAUTER are only satisfied when we've found the very best solution for you. After all, our heritage from the Swabian Jura Mountains and the famous inventive talent of the people that live here, means we have an exceptional reputation to maintain..“

SAUTER

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c/o KERN & SOHN GmbH

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info@kern-sohn.com

German Excellence Group

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SAUTER

MEASURING TECHNOLOGY

Force measurement · Coating thickness measurement · Hardness measurement
Material thickness measurement · Calibration service

GB

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info@uranusz.hu www.uranusz.hu
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2013

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SAUTER Pictograms

External sensor: the sensor is separated from the display unit by cable.

Printer: a printer can be connected to the device to print out the measurements.

Calibration block: standard for adjusting or correcting the measuring device.

PC software: to transfer the measurements from the device to a PC.

Ultraviolet light: for optical analysis of the test object.

Switch / Analog Output

Electrical conductivity: for testing electrical material characteristics.

Data interface: RS 232 C, bidirectional, for connection of printer and PC.

Thermal conductivity: for testing thermal material characteristics.

Data interface USB

Scan mode: continuous capture and display of measurements.

ZERO: Resets the display to „0“.

Peak hold function: capturing a peak value within a measuring process.

Strain gauges: Electrical resistor on an elastic deforming body.

Push and Pull: the measuring device can capture tension and compression forces.

Tuning fork principle: A resonating body is electromagnetically excited, causing it to oscillate.

Length measurement: captures the geometric dimensions of a test object or the movement during a test process.

Electromagnetic force compensation: Coil in a permanent magnet. For the most accurate weighings.

Focus function: increases the measuring accuracy of a device within a defined measuring range.

Single cell technology: Advanced version of the force compensation principle with the highest level of precision.

Function to set limits: Input of an upper/lower limit value. A visual and acoustic signal supports the measuring operation

Verification possible: The time required for verification is specified in the pictogram.

Motorised drive: the mechanical movement is carried out by a motorised drive.

DKD calibration possible: The time required for DKD calibration is shown in days in the pictogram.

Fast move: the total length of travel can be covered by a single lever movement.

Package shipment
The time required to manufacture the product internally is shown in days in the pictogram.

Internal memory: to save measurements in the device memory.

Pallet shipment
The time required to manufacture the product internally is shown in days in the pictogram.

Statistics

Warranty: The warranty period is shown in the pictogram.

SAUTER – A heritage of precision

Dear customer,

for over seven generations my family has been leading the way in the precision measuring instruments‘ industry. Today more than ever before, there is a need for the most precise measurement.

We‘re also passionate about offering you products of highest possible quality, at the most affordable prices.

That‘s why we not only offer a comprehensive range of universal standard products, but also design bespoken solutions to fit your unique needs.

Take a look through our catalogue. If you have any queries or feedback, do not hesitate to call me or any of my colleagues. We‘ll be pleased to help you

SAUTER - Professional measuring equipment tailored to the requirements in the field.

Yours Albert Sauter, Managing director

KERN & SOHN GmbH

For a wide variety of scales and weights please visit the website of our partner company KERN & Sohn **www.kern-sohn.com)** or have a look through the product offering from page 53 onwards in this catalogue. Kern & Sohn is a leading provider in this industry.

SAUTER

German Excellence Group

Retailer information

Sales conditions

- **All prices are valid as of January 1st 2013** until a new version of the KERN catalogue is released. In Europe, all prices do not include the applicable V.A.T.
- **At SAUTER there is no minimum order value.** For orders less than € 15.00 there is no re-sale discount available. A minimum fee of € 15.00 will be charged for orders less than € 15.00 (net).
- **Delivery Conditions:** we supply ex works Balingen, i.e. the transport costs are invoiced. Any goods supplied, remain KERN’s property until complete payment for the goods sold has been received.

Delivery is usually via courier service.

When you see this symbol by truck, please ask for prices.

- **Extract from general terms and conditions:**
Court of jurisdiction/Legal domicile: 72336 Balingen, Germany; Commercial register N°: HRB 400865, AG Stuttgart; Managing director: Albert Sauter, Martin Sauter. For the full Terms and Conditions, please refer to the website.
- **Price changes and product changes** are likely in individual cases due to product modifications as well as error.
- **Sale or return:** within 14 days of purchase. Not valid for custom processes, such as, for example, special orders or test services such as, for example, calibration, verification etc.
- **Warranty:** 2 years.
Does not apply to consumables such as batteries, rechargeable battery packs etc.

Services

- **Free delivery:** all orders from dealers or through the KERN online shop with an order value over € 150.00 (list price and parcel shipment, within the EU, with our parcel service, no pallet shipment) are delivered free of charge
- **3 % web discount:** Additional discount for orders from the KERN online shop (only in combination with KERN e-invoice, please ask for details)
- **KERN DirectCash:** The quick, secure COD procedure for protection against non-payment. With the KERN DirectCash COD system, you can safely deliver orders to end customers with unknown credit rating, with no risk of non-payment. Please request further details on this procedure.

After-Sales-Service

- **Repair services** within 1 week at our plant in Balingen, transportation costs are additional. In urgent cases, if requested by customer, a replacement device will be provided until all repairs are completed; please ask.
- **Price reduction on a new device:** if repair costs exceed the current value of the defective device, a new device will be offered at a discount price. This offer is valid only up to 2 years after warranty expiration.
- **Spare parts service** within 48 hours, transportation costs are additional.

Marketing support

Catalogues, brochures, branch prospectuses – your own personalised marketing tools This catalogue and branch prospectuses are available free of charge. A neutral version of the catalogue, without the SAUTER address imprint, is also available for your marketing activities free of charge (50 pcs.), larger quantities on request. On demand, your company logo and address can be printed on the back of the SAUTER catalogue (from 200 pcs.), larger quantities on request. In this way you have your own individual marketing tool. The KERN catalogue branch prospectuses are available in the following languages: D, GB, F, I, E.

News • News • News

We also have lots of new models in our range for 2013.
Innovative products with the KERN quality you are used to – why not have a look for yourself ...

Precision balance EMB-V

Entry level laboratory balance with integrated density determination function

only € 225,–

Precision balance PCD

High resolution precision balance with removable display for maximum flexibility

from € 235,–

Precision balance KBJ

Convenient laboratory model at a basic price and completely new: with internal automatic adjustment!

from € 440,–
Coming soon...

Analytical balance ABS-N/ABJ-NM

Entry level analytical balance with high-quality single cell weighing system

from € 810,–

Moisture analyser DLT

High-end moisture analyser with touch-sensitive screen and innovative Windows CE touch® operating system

only € 2.600,–

IP protected bench scales WTB-N

Ideal in the food industry, protected by IP65, easy to clean

only € 220,–

Stainless steel bench scale FOB-S

Compact stainless steel balance - now particularly high resolution

only € 70,–

Stainless steel platform scale SFB

Stainless steel platform scale with IP67, XL platform and with EC-type approval

from € 820,–

Moisture analyser DLT

High-end moisture analyser with touch-sensitive screen and innovative Windows CE touch® operating system

only € 290,–

IP protected bench scales WTB-N

Ideal in the food industry, protected by IP65, easy to clean

from € 300,–

Stainless steel bench scale FOB-S

Compact stainless steel balance - now particularly high resolution

from € 1.700,–

Stainless steel platform scale SFB

Stainless steel platform scale with IP67, XL platform and with EC-type approval

only € 2.950,–

All prices listed here are without german legal VAT (19%).

News · News · News

We also have lots of new models in our range for 2013.
Innovative products with the SAUTER quality you are used to – why not have a look for yourself ...

Push/Pull force gauge FK-T

Robust Push/Pull force gauge for simple measurement

from
€ 350,-

➔ Further details see **page 9**

Force gauge FL

Premium force measuring instrument with graphic-assisted display

from
€ 490,-

➔ Further details see **page 11**

Test stand TPE

Test stand for 90° peel tests with simple operation

only
€ 520,-

➔ Further details see **page 16**

Force-measurement system FH-L

Force-measurement system for measuring high-capacity tension and compression forces from 200 kN up to 1000 kN

from
€ 2.000,-

(similar to illustration)

➔ Further details see **page 13**

Test stand TVM-N

Premium motorised test stand for professional force measurements

from
€ 1.590,-

➔ Further details see **page 19**

Lever test bench TJ

Lever test bench for measuring the thickness of layers, in particular of round objects

only
€ 580,-

➔ Further details see **page 38**

Ultrasound measuring instrument TD Gold

Ultrasound measuring instrument for testing the authenticity of gold

only
€ 450,-

➔ Further details see **page 44**

Premium durometer HK-D

Premium durometer for hardness testing of metals

only
€ 1.240,-

➔ Further details see **page 49**

All prices listed here are without german legal VAT (19%).

Your advantages

Quick Delivery
Items in stock are sent the same day if orders are placed before 1:00 pm (valid for parcel service delivery within the EC).

Price performance ratio
KERN scales are always an inexpensive alternative. They are durable, uncomplicated and easy to place into operation.

Direct dispatch
of ordered goods to your customer is available, invoice will be issued to you (third party business).

2 years warranty

You have no storage costs
– we maintain the storage.

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within 14 days of purchase

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Online-Shop
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E-mail order
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Fax order
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Consulting

Our team of consultants will assist you
from Monday to Friday
from 8:00 am to 6:00 pm

www.kern-sohn-com
For product specification sheets, user manuals, useful information, technical glossary, pictures and much more to download, and a smart search engine for test weights an balances

Do you have questions about our products?
Our customer consultants will be pleased to assist you:

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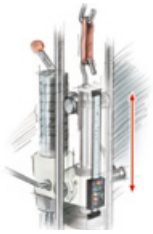
Length measurement		30-32	02
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KERN – measuring technology and testing services from a single source

KERN main balances catalogue

Provides a complete overview of the KERN line of balances, test weights, and services.

KERN medical product catalogue

Complete line of medical scales, from infant scales to professional patient scales, seated scales and adiposity scales, as well as innovative manual force scales, chemist‘s scales, and veterinary scales.

KERN DKD calibration service brochure

Detailed information on topics pertaining to the calibration of balances, test weights, and force measuring devices.

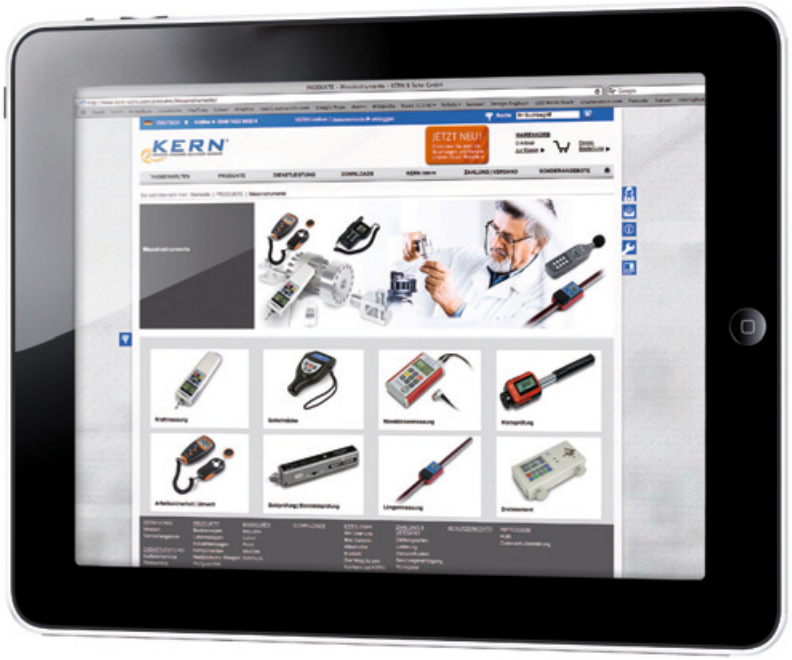
SAUTER measuring equipment catalogue

Test instruments for industry and commerce, such as force, coating thickness, material thickness, and hardness measuring systems.

KERN industry brochures

Compact overview of the best-sellers for many different lines of business - just the balances your customers need!

Online-Shop: www.kern-sohn.com



ONLINE-SHOP
At your disposal round the clock. Here you can order all SAUTER products quickly and easily. Delivery and service through your specialist dealer.

ONE-STOP-SHOPPING
From force gauge to test stand - everything from one supplier.

DOWNLOADS
For each model there is an individual brochure, user manual or pictures.

MEASURING INSTRUMENTS QUICK-FINDER
Find the product you want with the „Measuring instruments Quick-Finder“ in no time.

CALIBRATION
In our accredited DKD (= German Calibration Service) calibration laboratory, we issue internationally valid DKD calibration certificates for balances, test weights and measuring technology.

SPECIAL OFFERS
Special offers, special models and opportunities – something for everybody and always up to date – just drop in!

1 Force measurement

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FK FK Tensio	Robust Push/Pull force gauge for simple measurement	9
FH-S	Universal digital force gauge (Push/Pull) with Peak-Hold function	10
FL	Premium force measuring instrument with graphic-assisted display	11
FH-M	Force-measuring devices with external measuring cells	12
FH-L	Force-measurement system for measuring high-capacity tension and compression forces from 200 kN up to 1000 kN	13
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TVP/ TVP-L	Manual test stand with digital length meter	15
TPE	Test stand for 90° peel test with simple operation	16
THM	Premium motorised test stand for force measurement with highest demands	17
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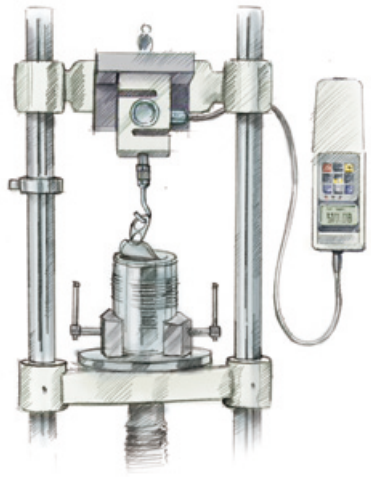


Quick-Finder Force measurement

Readout [d] N	Measuring range [Max] N	Model SAUTER	Price € excl. of VAT ex works	Page
0,001	2	FH 2.	460,-	10
0,001	5	FH 5.	460,-	10
0,001	10	SD 10N70	1640,-	21
0,002	5	FL 5	490,-	11
0,002	20	SD 20N70	1640,-	21
0,005	10	FK 10.	250,-	9
0,005	10	FH 10.	460,-	10
0,005	10	FL 10	490,-	11
0,01	25	FK 25.	250,-	9
0,01	20	FH 20.	460,-	10
0,01	50	FH 50.	460,-	10
0,01	25	FL 20	490,-	11
0,01	30	SD 30N70	1640,-	21
0,01	50	SD 50N100	1640,-	22
0,02	50	FK 50.	250,-	9
0,02	50	FL 50	490,-	11
0,02	100	SD 100N100	1640,-	21
0,05	10	FA 10.	210,-	8
0,05	100	FK 100.	250,-	9
0,05	100	FH 100	460,-	10
0,05	100	FL 100	490,-	11
0,05	200	SD 200N100	1640,-	22
0,1	20	FA 20.	210,-	8
0,1	250	FK 250.	250,-	9
0,1	200	FH 200.	460,-	10
0,1	500	FH 500.	460,-	10
0,1	250	FL 200	490,-	11
0,1	300	SD 300N100	1640,-	22
0,1	500	SD 500N100	1640,-	22
0,2	30	FA 30.	210,-	8
0,2	500	FK 500.	250,-	9
0,2	500	FL 500	490,-	11
0,2	1.000	SD 1KN150	1810,-	23
0,25	50	FA 50.	210,-	8
0,5	100	FA 100	210,-	8
0,5	1.000	FK 1K.	250,-	9
0,5	1.000	FL 1K	560,-	11
0,5	1.000	FH 1K	690,-	12
0,5	2.000	SD 2KN150	1810,-	23
1	200	FA 200	210,-	8
1	2.500	FL 2K	560,-	11
1	2.000	FH 2K	690,-	12
1	5.000	FH 5K	825,-	12
1	3.000	SD 3KN150	1950,-	23
1	5.000	SD 5KN150	2020,-	23
2	300	FA 300.	210,-	8
2,5	500	FA 500.	210,-	8
5	10.000	FH 10K	980,-	12
10	20.000	FH 20K.	990,-	12
10	50.000	FH 50K.	1150,-	12
50	100.000	FH 100K.	1200,-	12
100	200.000	FH 200K.	2000,-	13
100	500.000	FH 500K.	2500,-	13
1000	1.000.000	FH 1M.	3600,-	13

Modern material testing covers, amongst other things, the capture of extraction and impression forces. This is an integral part of the testing process.

To do this, SAUTER offers an attractive range of reliable measuring equipment. Our measuring equipment does not replace any traditional material testing machines. With their simple and flexible construction, our testing systems have been designed for testing on your production line.

SAUTER force-measuring devices and test stands stick out because they are easy to use, give high speed of operation and are tough enough to withstand harsh environmental conditions.

As a guide, the following has been put together as a sample system for typical material testing applications:

- Force-measuring device, e. g. FH or FK series
- Test stand, e. g. TVL or TVM-N series
- Calibration e. g. 961-163
- PC evaluation software e. g. AFH FAST (only in combination with the FH series)

Do you have questions about SAUTER force measuring equipment?

Your SAUTER product specialist will be pleased to help:

Nadine Nerlich
Tel. +49-(0) 74 33-99 33-205
Fax +49-(0) 74 33-99 33-29205
Mobil +49-(0)171-3059946
nerlich@kern-sohn.com

Mechanical force gauge SAUTER FA

Mechanical force gauge for measuring push and pull forces with peak hold function

Features

- **Dual scale**: shows Newton and kg
- **Rotatable display unit** for an easy calibration of the instrument
- **Peak hold function** through drag pointer
- Can be mounted on all manual test stands
- Zeroing by a short push of the switch
- 1 Delivered in a hard carrying case
- 2 Standard attachments: as shown below, extension rod: 90 mm

Technical data

- Precision: 1 % of [Max]
- Dimensions WxDxH 232x60x51 mm
- Net weight approx. 0,6 kg

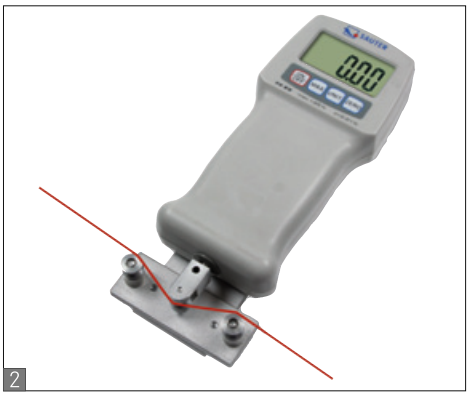
STANDARD

OPTION

Model **SAUTER**	Measuring range [Max] N	Readout [d] N	**Price** excl. of VAT ex works **€**	Option **ISO Calibr. Certificate** **ISO** KERN	 €
FA 10.	10	0,05	**210,-**	961-161	135,-
FA 20.	20	0,1	**210,-**	961-161	135,-
FA 30.	30	0,2	**210,-**	961-161	135,-
FA 50.	50	0,25	**210,-**	961-161	135,-
FA 100.	100	0,5	**210,-**	961-161	135,-
FA 200.	200	1	**210,-**	961-161	135,-
FA 300.	300	2	**210,-**	961-161	135,-
FA 500.	500	2,5	**210,-**	961-161	135,-

Digital force gauge SAUTER FK

1



2

Robust Push/Pull force gauge for simple measurement

Features

- **Turnable display:** automatic direction identification
- **Secure operability** due to ergonomic design
- **Real time** or **Peak Hold Mode** to observe transcients or capture peaks
- Selectable measuring units: N, lb, kg, oz
- **Auto-Power-Off**
- 1 Standard attachments: as shown below, extension rod: 90 mm
- Can be mounted on all SAUTER test stands

Technical data

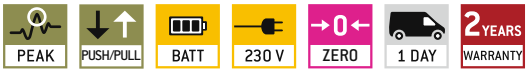
- Precision: 0,5 % of [Max]
- Measuring frequency: 1000 Hz
- Overload protection: 200 % of [Max]
- Dimensions WxDxH 195x84x35 mm
- Net weight approx. 0,6 kg

Accessories

2 With one of the two optional attachments for tensile strength testing, the SAUTER FK can become a tensiometer for testing the material tension characteristics of cables, threads, wires, twine etc.:

- **Tensiometer attachment** with **Safe-insert function:** Pull and release to insert the running cable in between the rolls, for tensile strength testing up to 250 N, SAUTER FK-A01, **€ 100,-**
- **Tensiometer kit for high-capacity tensile strength testing** up to 1000 N, SAUTER FK-A02, **€ 195,-**

STANDARD



OPTION

only FK 500.

Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option ISO Calibr. Certificate ISO KERN	 €	Option DKD Calibr. Certificate DKD KERN	 €
FK 10.	10	0,005	**250,-**	961-161	135,-	–	–
FK 25.	25	0,01	**250,-**	961-161	135,-	–	–
FK 50.	50	0,02	**250,-**	961-161	135,-	–	–
FK 100.	100	0,05	**250,-**	961-161	135,-	–	–
FK 250.	250	0,1	**250,-**	961-161	135,-	–	–
FK 500.	500	0,2	**250,-**	961-161	135,-	963-161	250,-
FK 1K.	1000	0,5	**250,-**	961-162	165,-	–	–

Digital force gauge SAUTER FH-S

1

2

3

Universal digital force gauge (Push / Pull) with Peak-Hold function with RS-232

Features

- **Turnable display** with backlight
- 1 Can be mounted on all manual test stands
- Digital force gauge with internal sensor
- **Data interface RS-232**, included
- 2 Standard attachments: as shown below, extension rod: 90 mm
- 3 Delivered in a hard carrying case
- Selectable measuring units: N, lb, kg
- **Real time** or **Peak Hold Mode** to observe transcients or capture peaks
- **Function to set limits:** Programmable high / low setpoints for go/no-go testing. Light and sound signal output
- **Auto-Power-Off**
- **Mini Statistics Kit:** calculates the average value from up to ten stored single values, min., max., n

Technical data

- High resolution: up to 10,000 points (total measuring range)
- Measuring frequency: 2000 Hz
- Precision: 0,5 % of [Max]
- Overload protection: 150 % of [Max]
- Dimensions LxWxH 230x66x35 mm
- Net weight approx. 0,64 kg

Accessories

- **Analogue output**. Control module with integrated relays. For example for machine control (I/O), SAUTER AFH-02, **€ 265,-**
- **Force-time evaluation software**, data transmission rate: 20 Hz, SAUTER AFH FAST, **€ 115,-**
- **Force-distance evaluation software** with graphic display of the measuring process, SAUTER AFH FD, **€ 650,-**
- Further accessory see www.kern-sohn.com and page 26/27

STANDARD

OPTION

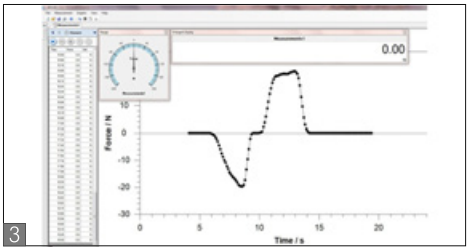
only FH 500.

Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Options ISO Calibr. Certificate ISO KERN	 €	DKD Calibr. Certificate DKD KERN	 €
FH 2.	2	0,001	**460,-**	961-161	135,-	–	–
FH 5.	5	0,001	**460,-**	961-161	135,-	–	–
FH 10.	10	0,005	**460,-**	961-161	135,-	–	–
FH 20.	20	0,01	**460,-**	961-161	135,-	–	–
FH 50.	50	0,01	**460,-**	961-161	135,-	–	–
FH 100.	100	0,05	**460,-**	961-161	135,-	–	–
FH 200.	200	0,1	**460,-**	961-161	135,-	–	–
FH 500.	500	0,1	**460,-**	961-161	135,-	963-161	250,-

Digital force gauge SAUTER FL

1

2



3

Premium force measuring instrument with graphic-assisted display

Features

- **Turnable display** with backlight
- **Real time** or **Peak Hold Mode** to observe transcients or capture peaks
- **Metal housing** for durable usage in harsh environmental conditions
- Can be mounted on all SAUTER test stands
- **Capacity display:** A bar lights up to show how much of the measuring range is still available
- **Function to set limits:** Programmable high / low setpoints for go/no-go testing. Light and sound signal output - ideal mode for efficient and accurate testing of standard parts
- **Internal memory** up to 500 values
- **Continuous analogue output:** Linear voltage signal in relation to the load (0 - 2 V)
- 1 Delivered in a hard carrying case
- 2 Standard attachments: as illustrated
- Selectable measuring units: N, kN, kgf, ozf, lbf

Technical data

- Measuring frequency: 1000 Hz
- Precision: 0,2 % of [Max]
- Dimensions WxDxH 175x75x30 mm
- Rechargeable battery pack internal, standard, operating time approx. 20 h
- Net weight approx. 505 g

Accessories

- 3 **Force-time evaluation software** with graphic display of the measuring process, data transmission rate 20 Hz, SAUTER AFH FAST, **€ 115,-**
- **Force-distance evaluation software** with graphic display of the measuring process, SAUTER AFH FD, **€ 650,-**
- **Fixing devices to hold the object in place** see www.kern-sohn.com

STANDARD

USB · ANALOG · RS 232 · GLP PROTOCOL · MEMORY · UNIT · TOL · PEAK · PUSH/PULL · 230 V · ACCU · 1 DAY · 2 YEARS WARRANTY

OPTION

SOFTWARE · ISO +4 DAYS · DKD +3 DAYS

only FL 500

Model SAUTER	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option ISO Calibr. Certificate ISO KERN	 €	Option DKD Calibr. Certificate DKD KERN	 €
FL 5	5	0,002	**490,-**	961-161	135,-	–	–
FL 10	10	0,005	**490,-**	961-161	135,-	–	–
FL 20	25	0,01	**490,-**	961-161	135,-	–	–
FL 50	50	0,02	**490,-**	961-161	135,-	–	–
FL 100	100	0,05	**490,-**	961-161	135,-	–	–
FL 200	250	0,1	**490,-**	961-161	135,-	–	–
FL 500	500	0,2	**490,-**	961-161	135,-	963-161	250,-
FL 1K	1000	0,5	**560,-**	961-162	165,-	–	–
FL 2K	2500	1	**560,-**	961-163	225,-	–	–

Digital force gauge SAUTER FH-M

Force-measuring devices with external measuring cells

Features

- **Turnable display** with backlight
- Digital force gauge with remote sensor
- **Data interface RS-232**
- Selectable measuring units: N, lb, kg, kN, t
- **Real time** or **Peak Hold Mode** to observe transcients or capture peaks
- **Function to set limits:** Programmable high / low setpoints for go/no-go testing. Light and sound signal output
- **Auto-Power-Off**
- **Mini Statistics Kit:** calculates the average value from up to ten stored single values, min., max., n

Technical data

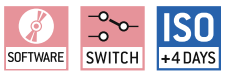
- High resolution: up to 10,000 points (total measuring range)
- Measuring frequency: 2000 Hz
- Precision: 0,5 % of [Max]
- Overload protection: 150 % of [Max]
- Dimensions housing LxWxH 238x63x36 mm
- Dimensions sensor WxDxH
- FH 1K - FH 20K: 51x76,2x19 mm
- FH 50K: 76,3x108x25,5 mm
- FH 100K: 125,2x178x51,3 mm

Options

- **Analogue output.** Control module with integrated relays. For example for machine control (I/O), SAUTER AFH-02, **€ 265,-**
- **Force-time evaluation software,** data transmission rate: 20 Hz, SAUTER AFH FAST, **€ 115,-**
- **Force-distance evaluation software** with graphic display of the measuring process, SAUTER AFH FD, **€ 650,-**
- Further accessories see www.kern-sohn.com and page 26

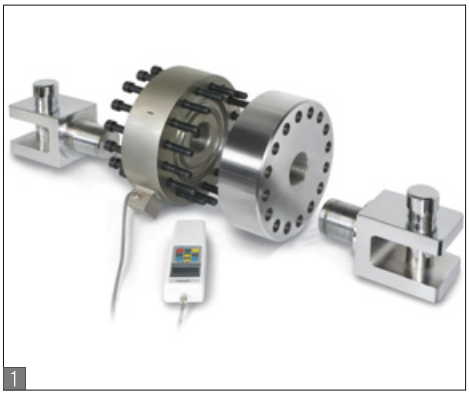
STANDARD

OPTION



Model **SAUTER**	Measuring range [Max] kN	Readout [d] N	**Price** excl. of VAT ex works **€**	Option **ISO Calibr. Certificate** **ISO** KERN	 €
FH 1K.	1	0,5	**690,-**	961-162	165,-
FH 2K.	2	1	**690,-**	961-162	165,-
FH 5K.	5	1	**825,-**	961-163	225,-
FH 10K.	10	5	**980,-**	961-163	225,-
FH 20K.	20	10	**990,-**	961-164	350,-
FH 50K.	50	10	**1150,-**	961-165	520,-
FH 100K.	100	50	**1200,-**	961-166	940,-

Digital force gauge SAUTER FH-L


1

Force-measurement system for measuring high-capacity tension and compression forces from 200 kN up to 1000 kN

Features

- Digital force gauge with external sensor
- **Large LCD display with backlight,** reverse display possible
- **Data interface RS-232**
- Selectable measuring units: N, lb, kg, kN, t
- **Real time** or **Peak Hold Mode** to observe transcients or capture peaks
- **Function to set limits:** Programmable high / low setpoints for go/no-go testing. Light and sound signal output
- **Auto-Power-Off**
- **Mini Statistics Kit:** calculates the average result from up to ten stored single results, min., max., n
- Typical applications are in the ship-building industry or in the construction of machinery and plant, Accessories see www.kern-sohn.com

Technical data

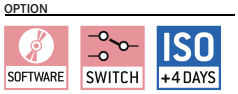
- Test frequency: 2000 Hz
- Precision: 1 % von [Max]
- Overload protection: 150 % von [Max]
- Dimensions housing LxWxH 238x63x36 mm
- Dimensions sensor
  FH 200K ØxH 45x155 mm
  FH 500K. ØxH 64x204 mm
  FH 1M ØxH 90x208 mm

Options

- **Analogue output**. Control module with integrated relays. For example for machine control (I/O), SAUTER AFH-02, **€ 265,-**
- **Force-time evaluation software**, data transmission rate: 20 Hz, SAUTER AFH FAST, **€ 115,-**

STANDARD

OPTION



Model **SAUTER**	Measuring range [Max] kN	Readout [d] N	**Price** excl. of VAT ex works **€**	Option **ISO Calibr. Certificate**
FH 200K.	200	100	**2000,-**	on demand
FH 500K.	500	100	**2500,-**	on demand
FH 1M.	1000	1000	**3600,-**	on demand

SAUTER TVE

SAUTER TVL

Manual test stand for precise testing, also with digital length meter

Features

- For vertical and horizontal use
- Precise measurement results
- **High level of security** with repeated measurements
- **Large and removable base plate** with various holes for fixture mountings
- Can be used for force gauges up to 500 N

TVL:

- 1 **Digital length meter**
  - measuring range: 0,01 mm
  - Zero setting possible
  - Pre-length can be set manually

Technical data

- Max travel from base plate: 297 mm
- Travel distance per knob rotation (stroke): 3,1 mm

TVE:

- Overall dimensions WxDxH 150x235x495 mm
- Net weight approx. 8,6 kg
- Height of upper hook above base plate: 460 mm

TVL:

- Overall dimensions WxDxH 151x234x465 mm
- Net weight approx. 8,7 kg

STANDARD

SCALE · 1 DAY · 2 YEARS WARRANTY

1

Model SAUTER	Measuring range [Max] N	Price excl. of VAT ex works €
TVE.	500	310,-
with digital length meter		
TVL.	500	370,-

Manual test stands SAUTER TVP · TVP-L

SAUTER TVP

SAUTER TVP-L

Manual test stand, also with digital length meter

Features

- Provides quick and consistent testing
- **High level of security** with repeated measurements
- **Provides maximum versatility** and precise measuring results
- **Lever operated test stand** for long distance measurement
- **Large and removable base plate** with various holes for fixture mountings

TVP-L:

- **Digital length meter**
  - measuring range: 0,01 mm
  - Zero setting possible
  - Pre-length can be set manually

Technical data

- Maximum carriage height above base plate: 318 mm
- Max travel with one stroke: 78 mm
- Overall dimensions WxDxH 150x233x420 mm
- Net weight approx. 10,5 kg

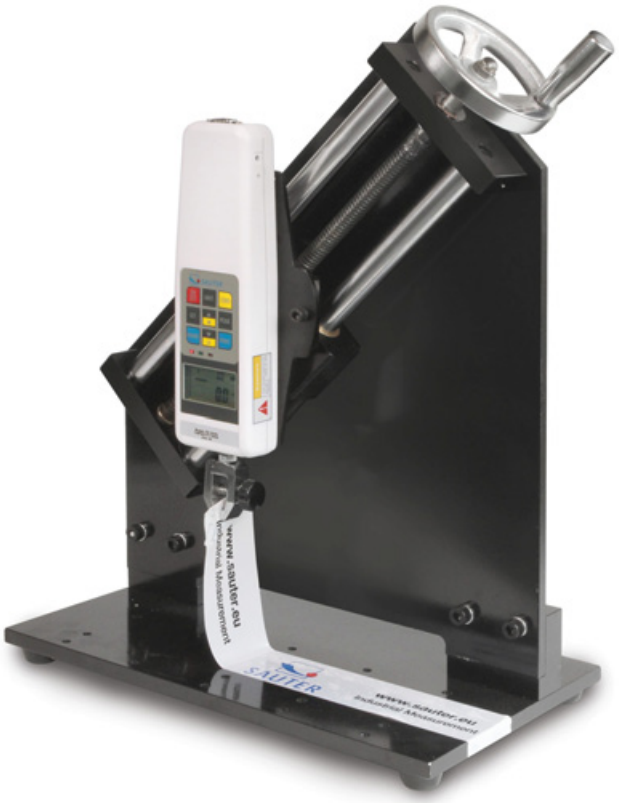
STANDARD

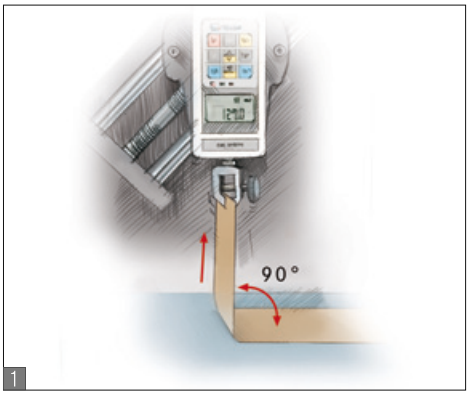
FAST-MOVE · SCALE · 1 DAY · 2 YEARS WARRANTY

only TVP-L.

Model SAUTER	Measuring range [Max] N	**Price** excl. of VAT ex works **€**
TVP.	500	**310,-**
with digital length meter		
TVP-L.	500	**370,-**

Crank test stand SAUTER TPE





1

2

Test stand for 90° peel test with simple operation

Features

- 1 The SAUTER test stand TPE has been developed specifically for peel testing. Typically this involves pulling a bonded material layer from a base material (see diagram)
- Safe reliable operation due to the crank
- As a general rule the significant value in this process is the force required to pull away the top layer from the bonded material
- The SAUTER TPE has been designed such that the force measuring unit exerting the force simultaneously moves sidewards and upwards. This means that a peel-off movement is produced, avoiding shear forces which could distort the measuring result.
- The test unit moves at an angle of 45° to the horizontal. The force-measurement device is fitted in a vertical position
- 2 Suitable for all SAUTER force-measuring devices up to 500 N (not included)

Technical data

- Travel distance per knob rotation (stroke): 3,1 mm
- Maximum stripping length: 105 mm
- Overall dimensions WxDxH 420x215x480 mm
- Net weight approx. 22 kg

Accessories

- **Digital length measuring unit**, readout 0,01 mm, must be ordered at purchase, on request, SAUTER ALA
- **Digital length measuring unit**, measuring range 300 mm, readout 0,01 mm, details see page 31, SAUTER LB 300-2., **€ 630,-**

STANDARD

OPTION

Model SAUTER	Price excl. of VAT ex works €
TPE	520,-

Motorised horizontal test stand SAUTER THM

1

Premium motorised test stand for force measurement with highest demands

Features

- **Easy to use**
- Efficient working
- Robust design and heavy duty metal construction
- **Various possibilities for fixture mountings** (see accessory page 26/27)
- 1 THM Foil Special for peel-off tests up to size DIN A4

Technical data

- Maximum tensile and compressive force: 500 N (Standard)
- Closest starting point of the carriage from the instrument: 30 mm
- Maximum length of travel: 250 mm (protected by electronic end switches)
- Overall dimensions LxWxH 550x170x345 mm
- Net weight approx. 35 kg

Accessories

- **Digital length measuring unit**, measuring range 300 mm, readout 0,01 mm, must be ordered at purchase, 300-2, **€ 200,-**
- **Digital length measuring unit**, measuring range 300 mm, readout 0,01 mm, details see page 31, SAUTER LB 300-2, **€ 630,-**
- Mounting the length measuring device onto a SAUTER test stand, at the factory, SAUTER LB-A02, **€ 190,-**

STANDARD

OPTION

Model **SAUTER**	Measuring range [Max] N	Speed range mm/min	**Price** excl. of VAT ex works **€**
THM 100N1000.	100	30 - 1000	**1695,-**
THM 500N500.	500	15 - 500	**1595,-**
THM 1000N250.	1000	10 - 250	**1970,-**

Motorised vertical test stand SAUTER TVO

01

1

Features

- Motorised test stand for tension an compression tests
- **Table-top design** for comfortable operation
- **Robust design** for durable use
- Easy-to-access safety switch-off
- Upper and lower end point, can be set individually
- Automatic or manual operation mode
- 1 Can be used for force gauges up to 500 N (e.g. SAUTER FH, details see page 10)

Technical data

- Maximum tensile and compressive force: 500 N
- Maximum length of travel: 300 mm
- Speed accuracy: 2 % of [Max]
- Overall dimensions LxWxH 570x428x236 mm
- Net weight approx. 25 kg

Accessories

- **Digital length measuring unit**, readout 0,01 mm, must be ordered at purchase, on request
- **Digital length measuring unit**, measuring range 300 mm, readout 0,01 mm, details see page 31, SAUTER LB 300-2, **€ 630,-**
- Mounting the length measuring device onto a SAUTER test stand at the factory, SAUTER LB-A02, **€ 190,-**

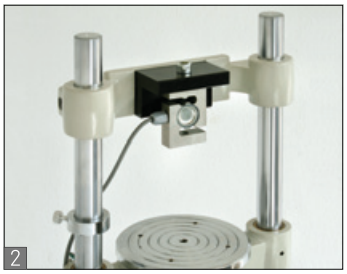
Premium test stand for laboratory applications

STANDARD

OPTION

Model **SAUTER**	Measuring range [Max] N	Speed range mm/min	**Price** excl. of VAT ex works **€**
TVO 500N300.	500	15 - 300	**1970,-**

Motorised vertical test stand SAUTER TVM-N



Premium motorised test stand for professional force measurements

Features

- 1 Premium operation panel:
  - Digital speed display
  - Digital repeat function display
- **Force controlled automatic switchoff**
  (Teststop after achieving an adjusted limit load)
- **Repeat function** for durability tests
  (multiple up and down, adjustable)
- **Digital speed display**: shows the displacement speed
- **Various possibilities for fixture mountings** (see accessories)
- 2 Possibilitities to attach force gauges (for SAUTER FH, FA, FK, FL):
  - Force gauges with internal sensor (up to 500 N capacity), only for SAUTER TVM 5000N230N, SAUTER TVM 10KN120N
  - Force gauges with external sensor (starting at 1,000 N capacity)
- Large illustration with length measuring unit, force gauge and mount for test objects (not included)

Technical data

- Maximum length of travel: 214 mm
  (protected by electronic end switches)
- Speed accuracy: 3 % of [Max]
- Initial height of the base plate: 171 mm
- Maximum travel of the base plate: 385 mm
- Minimum distance between base plate and bottom of upper object mounting: 85 mm
- Overall dimensions LxWxH 400x256x1015 mm
- Net weight approx. 58 kg

Accessories

- **Digital length measuring unit**, measuring range 300 mm, readout 0,01 mm, must be ordered at purchase, 300-2, **€ 200,-**
- 3 **Digital length measuring unit**, measuring range 300 mm, readout 0,01 mm, details see page 31, SAUTER LB 300-2, **€ 630,-**
- Mounting the length measuring device onto a SAUTER test stand at the factory, must be ordered at purchase, SAUTER LB-A02, **€ 190,-**

STANDARD

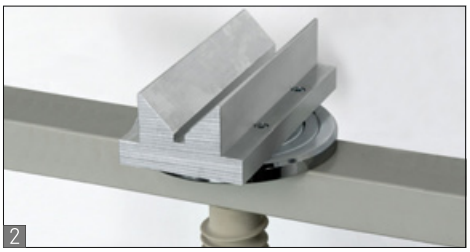
OPTION

Model SAUTER	Measuring range [Max] N	Speed range mm/min	Price excl. of VAT ex works €
TVM 5000N230N.	5000	10 - 230	1590,-
TVM 10KN120N.	10000	30 - 120	1900,-
TVM 20KN120N.	20000	30 - 120	2610,-
TVM 30KN70N.	30000	5 - 70	3150,-

Test stand SAUTER TVM-Special Box

NEW

1


2

3

Professional test stand, for testing many items, including cardboard boxes and packaging

Features

- Universal test stand to generate mechanical movement with an exceptional working width of around half a metre
- When used with the optional SAUTER AC 50 box supports, the test stand is then particularly suitable for carrying out quality testing for parcels, cardboard boxes or packaging (pressure bearing tests)
- These types of test sequences help to simulate the physical demands on packaging during its life and during transportation
- The new generation of SAUTER TVM test stands has the following characteristics:
  - **Force controlled automatic switchoff** (Teststop after achieving an adjusted limit load)
  - **Repeat function** for durability tests (multiple up and down, adjustable)
  - **Digital speed display**: shows the displacement speed
- The test stand can be operated with all SAUTER force-measuring devices, such as, for example SAUTER FH 100.
- Large illustration: Application example of TVM-N with SAUTER FH 5K. with external measuring cell (not included)
- 1 The test stand can also be operated with force-measuring devices with an internal measuring cell (below 500 N)

Technical data

- Maximum tensile and compressive force: 5000 N
- Maximum length of travel: 214 mm
- Safety shut down by electronic end switches, as well as other methods
- Speed range: 20 - 230 mm/min
- Overall dimensions LxWxH 700x450x1450 mm
- Width between the pillars: 505 mm
- Net weight approx. 70 kg

Accessories

- 2 **Box supports** made of aluminium for rectangular packaging. Can be fitted to all TVM test stands. Scope of supply: 2 pieces, SAUTER AC 50, **€ 590,-**
- 3 **Digital length measuring device** with data output, can be fitted to the test stand. For measuring the distance travelled in a test, SAUTER LB 300-2., **€ 630,-**
- Factory fitting the LB length measuring device to the test stand, SAUTER LB-A02, **€ 190,-**
- **Force-distance evaluation software** with graphic display of the measuring process, SAUTER AFH FD, **€ 650,-**

STANDARD

OPTION

Model SAUTER	Measuring range [Max] N	Price excl. of VAT ex works €
TVM 5000N230XL	5000	4900,-

Spring testing system SAUTER SD-S

Features

- Spring tester for tension and compression tests
- **Integrated thermal printer**
- **Data interface RS-232**
- **Digital length measuring unit**:
  - Manual zero adjustment possible
  - Pre-length can be set manually
  - Readout: 0,01 mm
- **10 memories** to print out the results or to calculate average values
- **Function to set limits**: Input of an upper/lower limit value. A visual and acoustic signal supports the measuring operation
- **Peak load display** (peak hold)
- Selectable measuring units: kg, lbf, N

Technical data

- Precision: 0,5 % of [Max]
- Stroke length: 70 mm
- Maximum test object length: 70 mm
- Overall dimensions WxDxH 300x235x620 mm
- Net weight approx. 12,5 kg

Manual test stand for tensile and compressive testing of springs, small version from 10 N up to 30 N

STANDARD

OPTION

Model SAUTER	Measuring range [Max] N	Readout [d] N	**Price** excl. of VAT ex works €	Option **ISO Calibr. Certificate** ISO KERN	 €
SD 10N70.	10	0,001	**1640,-**	961-161	135,-
SD 20N70.	20	0,002	**1640,-**	961-161	135,-
SD 30N70.	30	0,01	**1640,-**	961-161	135,-

Spring testing system SAUTER SD-M

Features

- Spring tester for tension and compression tests
- **Integrated thermal printer**
- **Data interface RS-232**
- **Digital length measuring unit**:
  - Manual zero adjustment possible
  - Pre-length can be set manually
  - Readout: 0,01 mm
- **10 memories** to print out the results or to calculate average values
- **Function to set limits**: Input of an upper/lower limit value. A visual and acoustic signal supports the measuring operation
- **Peak load display** (peak hold)
- Selectable measuring units: kg, lbf, N

Technical data

- Precision: 0,5 % of [Max]
- Stroke length: 100 mm
- Maximum test object length: 100 mm
- Overall dimensions WxDxH 300x235x620 mm

Manual test stand for tensile and compressive testing of springs, medium version from 50 N up to 500 N

STANDARD

OPTION

Model SAUTER	Measuring range [Max] N	Readout [d] N	Net weight approx. kg	**Price** excl. of VAT ex works €	Option **ISO Calibr. Certificate** ISO KERN	 €
SD 50N100.	50	0,01	20	**1640,-**	961-161	135,-
SD 100N100.	100	0,02	17,5	**1640,-**	961-161	135,-
SD 200N100.	200	0,05	19,1	**1640,-**	961-161	135,-
SD 300N100.	300	0,1	20,1	**1640,-**	961-161	135,-
SD 500N100.	500	0,1	20,8	**1640,-**	961-161	135,-

Spring testing system SAUTER SD-L

Features

- Spring tester for tension and compression tests
- 1 **Integrated thermal printer**
- **Data interface RS-232**
- **Digital length measuring unit**:
  - Manual zero adjustment possible
  - Pre-length can be set manually
  - Readout: 0,01 mm
- **10 memories** to print out the results or to calculate average values
- **Function to set limits**: Input of an upper/lower limit value. A visual and acoustic signal supports the measuring operation
- **Peak load display** (peak hold)
- Selectable measuring units: kg, lbf, N

Technical data

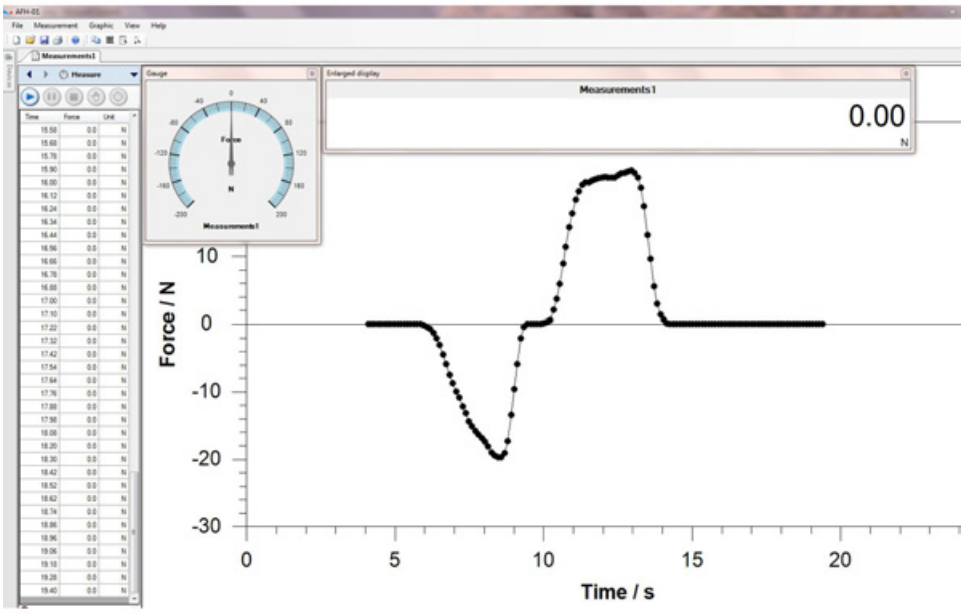
- Precision: 0,5 % of [Max]
- Stroke length: 150 mm
- Maximum test object length: 200 mm
- Overall dimensions WxDxH 490x300x920 mm
- Net weight approx. 49,5 kg

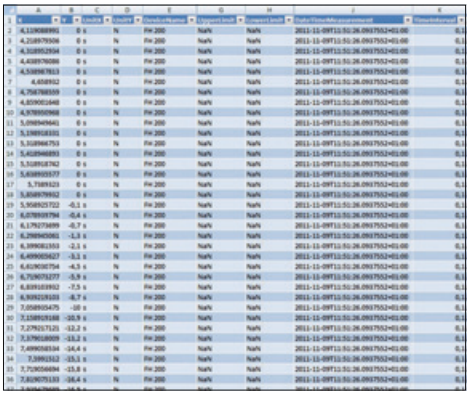
Manual test stand for tensile and compressive testing of springs, large version from 1000 N up to 5000 N

STANDARD

OPTION

Model SAUTER	Measuring range [Max] kN	Readout [d] N	Price excl. of VAT ex works €	Option ISO Calibr. Certificate ISO KERN	 €
SD 1KN150.	1	0,2	**1810,-**	962-162	165,-
SD 2KN150.	2	0,5	**1810,-**	962-162	165,-
SD 3KN150.	3	1	**1950,-**	962-163	225,-
SD 5KN150.	5	1	**2020,-**	962-163	225,-





High speed data transfer software for force-time-measurements

• Features

- Force measurements can be conducted over a very short period, i.e. seconds
- A high speed data transfer to a PC is possible (with a transfer of up to 20 data sets per second) when combining the AFH FAST with SAUTER FH or SAUTER FL (only 3 data sets per sec.)
- AFH FAST shows the results in a Force-Time-Graph and can export the data to MS Excel.

Technical data

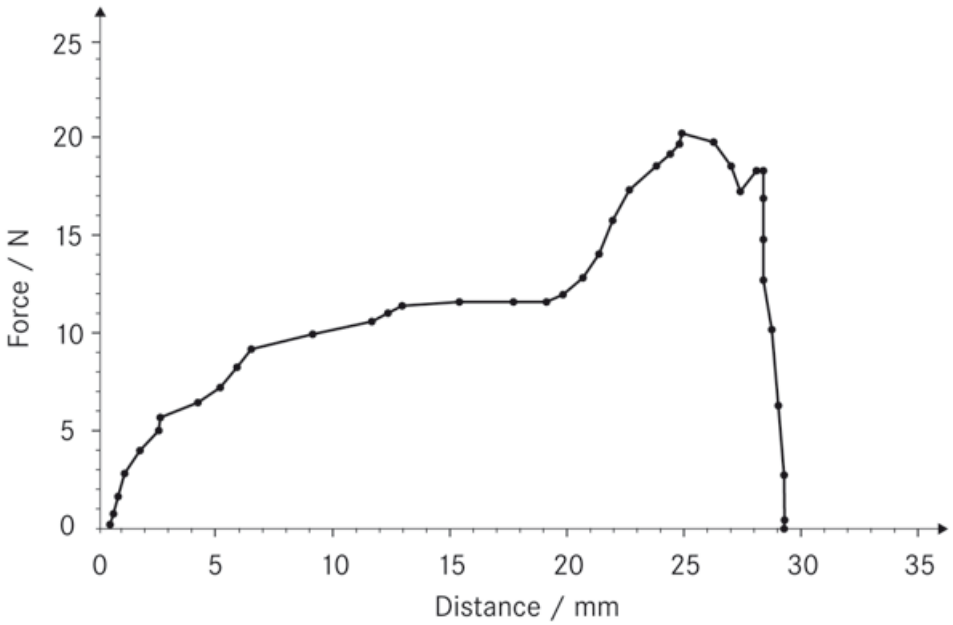
- Data recording rate max.: 20 Hz (with FH), 20 Hz (with FL)

Accessories

- 1 **Converter cable (RS-232 to USB)**, SAUTER AFH 12, **€ 85,-**
- **RS-232/Ethernet adapter**, SAUTER YKI-01, **€ 390,-**

Model KERN	Price excl. of VAT ex works €
AFH FAST	**115,-**

Alanysis software SAUTER AFH FD



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Force-displacement analysis software for testing materials

Features

- AFH FD software is designed for all applications that require the measurement of forces, depending on the displacement. Typically these are force progression graphs in penetration tests or pullout tests
- The program simultaneously requests the measurements from a force-measuring device, e.g. SAUTER FH, as well as a length-measuring device, e.g. 1 SAUTER LB
- The measurements from both instruments are transferred continuously to the PC, synchronised by the AFH FD software and exported in the form of a graphic, as well as free data format for simple processing in Microsoft Excel
- The software AFH FD is compatible with all devices in the SAUTER FH, SAUTER FL and SAUTER LB ranges
- Other devices are not supported at this time, but may be included on request
- These measuring instruments are usually used with SAUTER test stands, in particular those from the SAUTER TVM-N range. However, it is also possible to use them with other mechanical testing machines
- Further analysis functions:
  - Dimensions of the test object
  - Tensile and compressive force
  - Load test
  - Archiving the recorded data
- 2 Scope of supply SAUTER AFH FD:
  - AFH FD software on DVD
  - User manual
  - Software licence
  - PC connection cable LB-A01 (RS-232 zu LB)
  - PC connection cable FH-A01 (RS-232 zu FH)
- 3 Order example for a complete test system:
  - FH 5K. (Digital force gauge)
  - LB 300-2. (Digital length measuring unit)
  - AFH FD (Force-deflection software)
  - TVM 5000N230N.* (Test stand)
  - LB-A02* (Mounting LB on test stand)
  - AFH 14* (Y-USB converter)
  - AC 04* (Test object holder)
  - 961-163* (Force calibration)
  - 961-150* (Length calibration)

  * not necessarily required for operating the AFH FD software

Technical data

- Data recording rate max. 3 Hz (specially in combination with SAUTER FH and SAUTER LB)
- Cable length of PC connection cable (RS-232) approx. 1,5 m

Options

- 4 **Y converter cable**, 2 x RS-232 to USB, to connect both measuring devices to a PC or laptop via the USB interface, SAUTER AFH 14, **€ 115,-**
- **PC connection cable** (RS-232) as standard, can be reordered, for SAUTER FH: SAUTER FH-A01, **€ 46,-** for SAUTER LB: SAUTER LB-A01, **€ 360,-**

STANDARD

GLP PROTOCOL

Model SAUTER	Price excl. of VAT ex works €
AFH FD	650,-

Stainless steel handle bar
with rubber grip for FH external sensor,
1 piece
FA, FH, **AFH 04**, **€ 75,-**
FK, **AFK 02**, **€ 50,-**

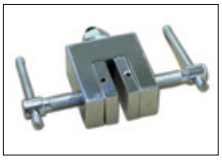
Pin vice
Tension, fracture, insert/withdraw
force measurement, up to 500 N,
2 pieces
AC 01, **€ 90,-**

Thin film grip
Tension, fracture, insert/withdraw
up to 5 kN,
2 pieces
AC 03, **€ 105,-**

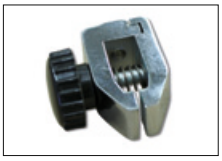
Pressure disc
Compression & fracture measurement
up to 5 kN, Ø 110 mm,
2 pieces
AFH 06, **€ 55,-**

Grip clamp
tension measurement up to 5 kN,
2 pieces
AC 09, **€ 85,-**

Cable fixture
Tension and fracture, all kinds of cables
up to 500 N, like SAUTER AC 10, small version,
1 piece
AC 10S, **€ 55,-**

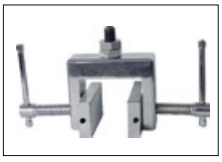


Parallel jaw grip
push or pull tests up to 5 kN,
2 pieces
AC 12, **€ 75,-**



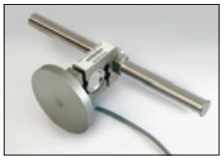
Fine point clamp
push and pull tests up to 500 N,
width: 15 mm,
2 pieces
AC 14, **€ 55,-**

Heavy-duty-clamp
push and pull tests up to 5 kN,
2 pieces
AC 16, **€ 105,-**



2-jaw-grip
tension and fracture tests up to 5 kN,
2 pieces
AC 18, **€ 105,-**

Heavy-duty-grip for pulltests,
1 piece
AC 31 (up to 5 kN), **€ 330,-**
AC 32 (up to 10 kN), **€ 800,-**

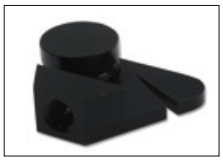


Stainless steel handle bar
with rubber grip for safe handling,
1 piece
AFH 05, **€ 55,-**

Ball shaped head
Tests tensile & pressure strength,
up to 5 kN,
3 pieces
AC 02, **€ 55,-**

Wedge grip for tensile tests
for heavy duty use up to 5 kN,
1 piece
AC 04 (up to 5 kN), **€ 330,-**
AC 37 (up to 10 kN), **€ 600,-**

Pressure disc
for tensile tests up to 5 kN,
(e. g. plastics), Ø 49 mm,
2 pieces
AC 08, **€ 55,-**

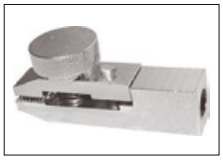


Cable fixture
Tension & fracture, all kinds of cables
up to 5 kN,
2 pieces
AC 10, **€ 105,-**

Cable fixture
Tension and fracture, all kinds of cables
up to 5 kN,
2 pieces
AC 11, **€ 105,-**

1-jaw-clamp
Tension, peeling force measurement
up to 5 kN,
2 pieces
AC 13, **€ 75,-**

Ring fixture
Tension and fracture measurement
up to 500 N,
1 piece
AC 15, **€ 40,-**



Long clamp
light clamp specialised in low-load tests
up to 50 N,
2 pieces
AC 17, **€ 90,-**

Cylinder Top
tests tensile strength of springs
up to 500 N,
2 pieces
AC 19, **€ 115,-**

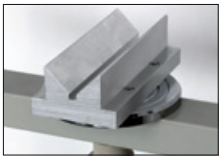
Cylindrical clamps for extraction test
in particular from textile base layers,
up to 500 N,
1 piece
AC 36, € 245,-

Eccentric roll clamp
in particular for cable tests up to 5 kN,
max. opening: 9 mm,
1 piece
AC 41, € 160,-

Standard attachments kit
for all force-measuring devices FA and FH 10 up to 500 N, 6 items
AC 43, € 45,-

Flat square-shaped sensor
for lateral power sensing of back,
chest or arm up to 1000 N,
1 piece
AC 46, € 90,-

Tombstone tester
Suitable for testing the stability of tombstones according to VSG 4.7,
1 piece
FA 500 G, € 315,-
Option: ISO Calibration
961-161, € 135,-



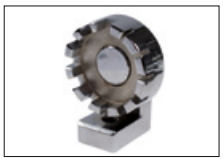
Box sensors made of aluminium,
in particular for rectangular packaging.
Fits on all TVM test stands, up to 5 kN
2 pieces
AC 50, € 590,-

RS-232 PC connection cable
from FH devices to PC as spare part,
1 piece
FH-A01, € 46,-

RS-232 USB converter, fits on all balances and instruments with RS-232 output,
1 piece
AFH 12, € 85,-

Bending attachment for bend testing
for material tests to increase the bending characteristics. Equipped with mirror to observe the lower side of the material, with three rounded, bending dies Ø 8, 12, 16 mm, mounted to swing freely. Rollers with ball bearings
1 piece
AC 51, € 900,-

Quick clamps
for high-capacity tensile tests up to 30 kN,
max. opening: 8 mm,
1 piece
AC 38, € 800,-



Drum clamps
typically for cable connector extraction tests up to 5 kN, for test objects with Ø from 1.5 mm to 8 mm, 1 piece
AC 42, € 160,-

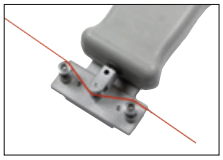
Concave force sensor
with optimised radius for measurement, particularly of arms and legs up to 1000 N,
1 piece
AC 45, € 135,-

Round sensor
to measure particular muscle groups, such as, for example, the shoulder up to 1000 N,
1 piece
AC 47, € 95,-

Handle
(length: 300 mm) and two round force receptor plates (Ø 85 mm) as an option to FH 1K up to FH 5K for the safe testing of clamping forces (not approved to DIN 18650 or similar) , up to 5 kN, 1 piece
AFH 03, € 295,-

Carrying strap
Carrying strap for tombstone testers,
1 piece
AC 35, € 50,-

Tensiometer attachment
optional for all FK models from FK 10 up to FK 250, 1 piece
1 piece
FK-A01, € 195,-



Tensiometer kit
for high-capacity tensile strength testing up to 1000 N,
1 piece
FK-A02, € 195,-

2 x RS-232 Y-USB converter
Fits on all balances and instruments with RS-232 output,
1 piece
AFH 14, € 115,-

Hook weights, Slotted weights, Beam bars

Correctly selected test weights with DKD calibration certificate are the pre-requisite for ensuring that your balances are not only correctly adjusted, but also correctly calibrated. Scheduled testing of your balances with such test weights helps to guarantee your quality requirements and to maintain your quality targets.

Slotted weights, finely turned brass

- **Test weight material:** Finely turned brass
- **Container material:** Lined plastic

Slotted weight				+ Container		+ DKD certificate		= Package price	
KERN		Tol ±mg	€	KERN	€	KERN	€	KERN	€
347-415	1 g	1,0	14,–	347-030-400	2,–	962-631	13,–	347-4154-600	29,–
347-425	2 g	1,2	15,–	347-030-400	2,–	962-632	13,–	347-4254-600	30,–
347-435	5 g	1,6	16,–	347-030-400	2,–	962-633	13,–	347-4354-600	31,–
347-445	10 g	2,0	19,–	347-030-400	2,–	962-634	13,–	347-4454-600	34,–
347-455	20 g	2,5	20,–	347-080-400	2,–	962-635	13,–	347-4554-600	35,–
347-465	50 g	3,0	22,–	347-080-400	2,–	962-636	13,–	347-4654-600	37,–
347-475	100 g	5	25,–	347-090-400	3,–	962-637	13,–	347-4754-600	41,–
347-485	200 g	10	30,–	347-090-400	3,–	962-638	13,–	347-4854-600	46,–
347-495	500 g	25	48,–	347-110-400	3,–	962-639	13,–	347-4954-600	64,–
347-515	1 kg	50	77,–	347-130-400	9,–	962-641	13,–	347-5154-600	99,–
347-525	2 kg	100	116,–	347-130-400	9,–	962-642	13,–	347-5254-600	138,–
347-535	5 kg	250	216,–	347-140-400	9,–	962-643	14,–	347-5354-600	239,–
347-545	10 kg	500	376,–	347-140-400	9,–	962-644	17,–	347-5454-600	402,–

Beam bars, finely turned brass, for fixing slotted weights

- **Carrier bar material:** Brass, aluminium (347-445-100)

Carrier bar					+ DKD certificate	
KERN	Size	Largest slotted weight possible	Maximum total load	€	KERN	€
347-445-100	10 g	100 g	200 g	30,–	962-634	13,–
347-475-100	100 g	1 kg	2 kg	50,–	962-637	13,–
347-495-100	500 g	10 kg	20 kg	79,–	962-639	13,–
347-515-100	1000 g	10 kg	40 kg	118,–	962-641	13,–

Hook weights, finely turned brass

- **Test weight material:** Finely turned brass
- **Container material:** Lined plastic

Hook weight				+ Container		+ DKD certificate		= Package price	
KERN		Tol ±mg	€	KERN	€	KERN	€	KERN	€
347-416	1 g	1,0	12,–	347-030-400	2,–	962-631	13,–	347-4164-600	27,–
347-426	2 g	1,2	13,–	347-030-400	2,–	962-632	13,–	347-4264-600	28,–
347-436	5 g	1,6	14,–	347-030-400	2,–	962-633	13,–	347-4364-600	29,–
347-446	10 g	2,0	15,–	347-050-400	2,–	962-634	13,–	347-4464-600	30,–
347-456	20 g	2,5	16,–	347-050-400	2,–	962-635	13,–	347-4564-600	31,–
347-466	50 g	3,0	20,–	347-070-400	2,–	962-636	13,–	347-4664-600	35,–
347-476	100 g	5	23,–	347-090-400	3,–	962-637	13,–	347-4764-600	39,–
347-486	200 g	10	31,–	347-090-400	3,–	962-638	13,–	347-4864-600	47,–
347-496	500 g	25	43,–	347-110-400	3,–	962-639	13,–	347-4964-600	59,–
347-516	1 kg	50	63,–	347-120-400	3,–	962-641	13,–	347-5164-600	79,–
347-526	2 kg	100	104,–	347-130-400	9,–	962-642	13,–	347-5264-600	126,–
347-536	5 kg	250	180,–	347-140-400	9,–	962-643	14,–	347-5364-600	203,–
347-546	10 kg	500	350,–	–	–	962-644	17,–	–	–

Newton weights (N)

All hook and slotted weights as well as beam bars are available with N adjustment according to **M1 tolerances.** Additional price € 8,-.
We need to know the location of use and post code.
DKD-calibration certificate for N weights: identical to DKD prices for individual weights **M1**, additional price € 8,-.

„Get in touch with the future“

Come and discover all the features of the innovative KERN touchscreen models

• The highest level of transparency

All the function keys on the touch-sensitive display are labelled with plain text and with the menu languages available, this helps to ensure the highest level of transparency and ease of operation.

• Simply start writing

Thanks to the large keypad you can easily enter recipe ingredients, batch or item descriptions, user ID, tare values etc. in plain text – saving time and avoiding misunderstandings. At any time, all values can be printed out or transferred to a connected PC in accordance with GLP.

• Save costs

With the efficient touchscreen models, all common weighing applications are covered with one balance, such as, for example, counting, dispensing, mixing, percentage determination, totalising, animal weighing etc. So you just need one balance, which can be used in several locations, thanks to its compact dimensions.

• Process reliability

A generous memory allows you to store recipes with a large number of ingredients, which can be easily recalled and processed, time and time again.

• Several models

Compact for high-tech laboratories, with extra large weighing plate for larger units or with removable display for use under hoods or in glove bags – at KERN you will always find just the right product.

KERN – Weighing can be this simple.

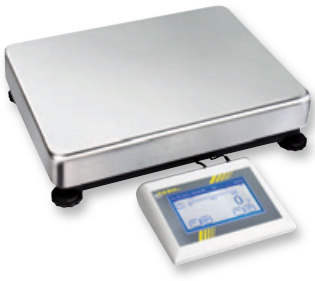
You will find a detailed description of our new touchscreen models in the KERN main Catalogue on the following pages:

Page 30: PKT precision balance
Page 52: DLT moisture analyser
Page 64: FKT bench scale
Page 100: IKT platform scale

KERN DLT

KERN PKT

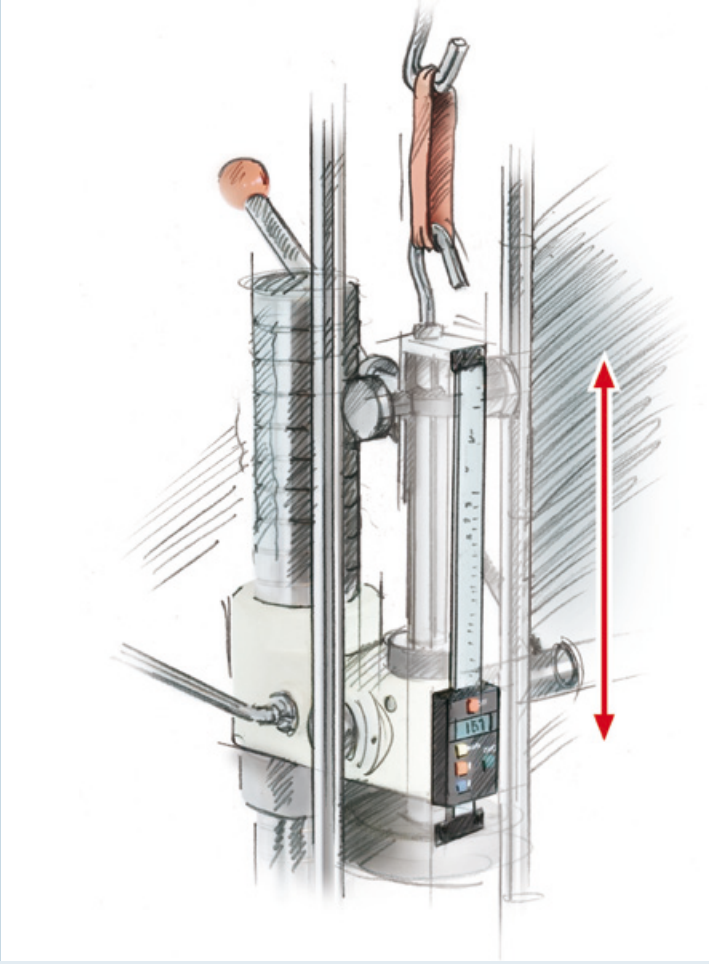
KERN FKT



KERN IKT

2 Length measurement

SAUTER Model		Page
LA	Distance measurement directly in your machines and installations	30
LB	Distance measurement directly in your machines or installations with RS-232 interface	31



Measuring geometric characteristics is one of the most common tests when carrying out material testing. The most well-known tool is the calliper gauge or the micrometer gauge (micrometer).

In this area of measurement, SAUTER confines itself to integrated calliper gauges which can be used in combination with deformity material testing.

Very often, the issue with material testing relates to a force which is exerted in connection with a specific deformity, i.e. expansion or compression of the test item.

In these cases, the force must be measured or recorded in relation to the distance travelled by the test item during the test.

Integrated calliper gauges capture this distance and these are typically fitted on test stands, machines or plant.

To do this, SAUTER offers two ranges:

- For applications with purely optical reading of the result: LA range
- For applications with digital transfer of the result to a PC: LB range

As a guide, the following has been put together as a sample system for a typical material test stand:

- Length measuring device e.g. LB 200-2.
- Test stand, e.g. TVM-N range
- Fitting to test stand e.g. LB-A02
- Calibration e.g. 961-150
- Data transfer software e.g. LB-A01 (only in combination with LB range)

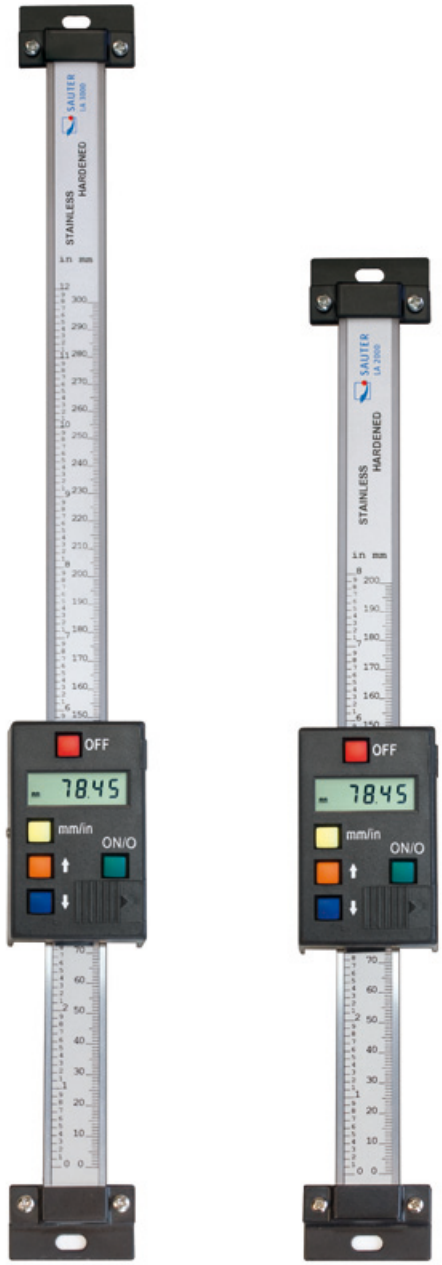
Quick-Finder Length measurement

Readout [d] N	Measuring range [Max] Nm	**Model** SAUTER	**Price** excl. of VAT ex works €	Page
0,01	200	**LA 200-2.**	**80,-**	31
0,01	200	**LB 200-2.**	**605,-**	32
0,01	300	**LA 300-2.**	**110,-**	31
0,01	300	**LA 300-2H.**	**110,-**	31
0,01	300	**LB 300-2.**	**630,-**	32
0,01	500	**LB 500-2.**	**895,-**	32

Do you have questions about SAUTER length measurement?

Your SAUTER product specialist will be pleased to help:

Nadine Nerlich
Tel. +49-(0) 74 33-99 33-205
Fax +49-(0) 74 33-99 33-29205
Mobil +49-(0)171-3059946
nerlich@kern-sohn.com



similar to illustration

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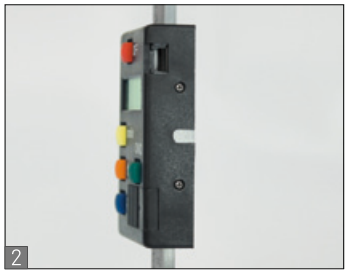

2

Features

- **Easy to use**
- **Digital sliding calliper with a superior precision** even at high operation speed
- **Easy mounting** to tooling machines, conveyer, test stands etc.
- 1 Zeroing, pre-added and pre-reduced length as well as switching the unit can be done manually

Technical data

- Batteries included
- 2 Dimensions housing LxWxH 74x44x18 mm

Distance measurement directly in your machines or installations

STANDARD

BATT · ZERO · 1 DAY · 2 YEARS WARRANTY

OPTION

ISO +4 DAYS

Model **SAUTER**	Measuring range [Max] mm	Readout [d] mm	Direction of measure-ment	Length mm	**Price** excl. of VAT ex works **€**	Option **ISO Calibr. Certificate** **ISO** KERN	 €
LA 200-2.	200	0,01	vertikal	350	**80,-**	961-150	120,-
LA 300-2.	300	0,01	vertikal	450	**110,-**	961-150	120,-
LA 300-2H.	300	0,01	horizontal	450	**110,-**	961-150	120,-

Digital length measuring device SAUTER LB

Distance measurement directly in your machines or installations with RS-232 interface

Features

- **Digital sliding calliper with a superior precision** even at high operation speed
- **Easy mounting** to tooling machines, conveyer, test stands etc.
- Zeroing, pre-added and pre-reduced length as well as switching the unit can be done manually
- **Data interface RS-232**, standard
- Selectable measuring units: mm, inch

Technical data

- Dimensions housing WxDxH 77x43x34 mm
- Batteries included

Accessories

- **Data transfer software** (interface cable included), SAUTER LB-A01, **€ 360,-**
- Mounting the length measuring device onto a SAUTER test stand at the factory, SAUTER LB-A02, **€ 190,-**

STANDARD

OPTION

Model **SAUTER**	Measuring range [Max] mm	Readout [d] mm	Direction of measurement	**Price** excl. of VAT ex works **€**	Option **ISO Calibr. Certificate**	
					ISO KERN	€
LB 200-2.	200	0,01	vertikal	**605,-**	961-150	120,-
LB 300-2.	300	0,01	vertikal	**630,-**	961-150	120,-
LB 500-2.	500	0,01	vertikal	**895,-**	961-150	120,-

3 Coating thickness

SAUTER Model		Page
TB	Your reliable worktool for every day: light, easy, precise	34
TC	Your constant companion - compact and easy to use	35
TE	Easy-to-operate, ideal to handle by external sensors	36
TF TG	Premium measuring devices for paint coating, lacquer coating etc.	37
TJ	Lever test stand for measuring the thickness of layers, in particular of round objects	38

We are aware of measuring coating thicknesses from, for example, the paint measurement for coating thickness as used for cars. In fact these measurements are used much more widely in industrial applications. This is where the thickness of the surface finish is measured, such as galvanisation, zinc coating etc, or also lacquers.

Fundamentally there are two measuring principles for determining coating thickness:

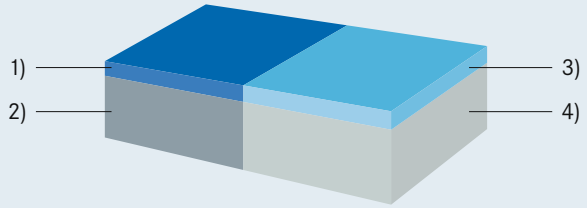
Type F: Non-magnetic coatings on magnetic metals, such as iron or steel (magnetic induction principle). Here are some sample material combinations::

[1)][aluminium, chrome, copper, rubber, lacquer] on
[2)][steel, iron, alloys, magnetic stainless steel]

Type N: Non-magnetic coatings on non-magnetic metals, such as aluminium (eddy current principle). Here are some sample material combinations:

[3)][lacquer, paints, enamel, chrome, plastics] on
[4)][aluminium, brass, sheet metal, copper, zinc, bronze]

Type FN: All coatings as for type F and N on all metals as for type F and N (combination of magnetic induction and eddy current principle)



Quick-Finder Coating thickness

Read-out [d] N	Measuring range [Max] µm	Model SAUTER	Price € excl. of VAT ex works	Page
0,1	1000	TB 1000-0.1 F.	285,–	34
0,1	1000	TB 1000-0.1 FN.	360,–	34
0,1	1000	TB 1000-0.1 N.	325,–	34
0,1	1250	TC 1250-0.1 F.	325,–	35
0,1	1250	TC 1250-0.1 FN.	415,–	35
0,1	1250	TC 1250-0.1 FN-CAR.	425,–	35
0,1	1250	TC 1250-0.1 N.	360,–	35
0,1	1250	TE 1250-0.1 F.	325,–	36
0,1	1250	TE 1250-0.1 FN.	415,–	36
0,1	1250	TE 1250-0.1 N.	360,–	36
0,1	1250	TF 1250-0.1 FN.	480,–	37
0,1	1250	TG 1250-0.1 FN.	480,–	37
0,1	2000	TB 2000-0.1 F.	260,–	34

Do you have questions about SAUTER coating thickness?

Your SAUTER product specialist will be pleased to help:

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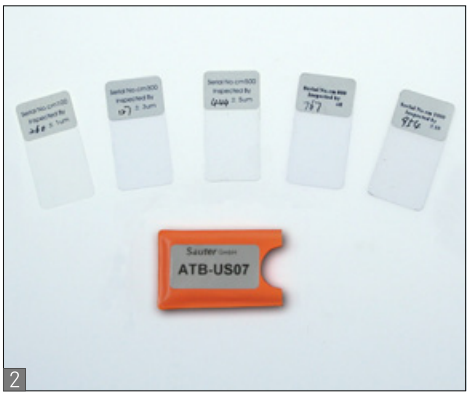
mikitisin@kern-sohn.com

Digital coating thickness gauge SAUTER TB

1



2

Your reliable worktool for every day: light, easy, precise

Features

- **External sensor** for difficult-to-access measurements
- **Base plate and calibration foils** included
- 1 Delivered in a hard carrying case
- **Offset-Accur:** This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- SAUTER TB 2000-0.1F.: Specifically designed for the automobile industry
- Selectable measuring units: µm, inch (mil)
- **Auto-Power-Off**

Technical data

- Precision:
  - Standard: 5 % of measured value
  - Offset-Accur: 1 % of measured value
- Minimal measuring area: 6 mm
- Minimal base thickness: 0,3 mm
- Dimensions LxWxH 161x69x32 mm
- Battery operation, batteries standard (4 x 1.5 V AA)
- Net weight approx. 0,26 kg

Accessories

- 2 **Calibration foils** for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3% tolerance), SAUTER ATB-US07, **€ 110,-**

STANDARD

OPTION

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object	Smallest sample surface (radius) mm	Price excl. of VAT ex works €	Option DKD Calibr. Certificate ISO KERN	 €
TB 1000-0.1F.	1000	0,1	Coatings on steel and iron	Convex: 1,5 Concave: 25	**285,-**	961-110	120,-
TB 1000-0.1N.	1000	0,1	Insulation coatings on non-magnetic metals	Convex: 3 Concave: 50	**325,-**	961-110	120,-
TB 1000-0.1FN.	1000	0,1	Combination instrument: F, N	see F / N	**360,-**	961-112	170,-
TB 2000-0.1F.	2000	0,1	Non-magnetic coatings on iron, steel	Convex: 1,5 Concave: 25	**260,-**	961-110	120,-

Digital coating thickness gauge SAUTER TC

1

2

Your constant companion - compact and easy to use

Features

- Ergonomic design for easy handling
- **Data interface RS-232**, included
- **Base plate and calibration foils** included
- 2 Delivered in a hard carrying case
- **Offset-Accur:** This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- Selectable measuring units: µm, inch (mil)

SAUTER TC 1250-0.1FN-CAR.:

- Specifically designed for the automobile industry
- **Automatic recognition of measuring mode** (F or N): „point and shoot“
- 1 **Simple and convenient 1-key operation**

Technical data

- Precision:
  - Standard: 3 % of measured value or ± 2,5 µm
  - Offset-Accur: 1 % of measured value or ± 1 µm
- Minimal base thickness: 0,3 mm
- Dimensions LxWxH 131x65x28 mm
- Battery operation, batteries standard (4 x 1.5 V AAA)
- Net weight approx. 81 g

Accessories

- **Software** (interface cable included), SAUTER ATC-01, **€ 80,-**

STANDARD

OPTION

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object	Smallest sample surface (radius) mm	**Price** excl. of VAT ex works **€**	Option **DKD Calibr. Certificate** ISO KERN	 €
TC 1250-0.1F.	100 | 1250	0,1 | 1	Coatings on steel and iron	Convex: 1,5 Concave: 25	**325,-**	961-110	120,-
TC 1250-0.1N.	100 | 1250	0,1 | 1	Insulation coatings on non-magnetic metals	Convex: 3 Concave: 50	**360,-**	961-110	120,-
TC 1250-0.1FN.	100 | 1250	0,1 | 1	Combination instrument: F, N	see F / N	**415,-**	961-112	170,-
TC 1250-0.1FN-CAR.	100 | 1250	0,1 | 1	Combination instrument: F, N	see F / N	**425,-**	961-112	170,-

Digital coating thickness gauge SAUTER TE

1

Easy-to-operate, ideal to handle by external sensors

Features

- **External sensor** for difficult-to-access measurements
- External sensors with other measuring ranges are available on request
- **Data interface RS-232**, included
- **Base plate and calibration foils** included
- 1 Delivered in a hard carrying case
- **Offset-Accur:** This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- Selectable measuring units: µm, inch (mil)
- **Auto-Power-Off**

Technical data

- Precision:
  - Standard: 3 % of measured value or ± 2,5 µm
  - Offset-Accur: 1 % of measured value or ± 1 µm
- Minimal base thickness: 0,3 mm
- Dimensions LxWxH 131x65x28 mm
- Battery operation, batteries standard (4 x 1.5 V AAA)
- Net weight approx. 81 g

Accessories

- **Software**, interface cable included, SAUTER ATC-01, **€ 80,-**

STANDARD

OPTION

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object	Smallest sample surface (radius) mm	**Price** excl. of VAT ex works **€**	Option **DKD Calibr. Certificate** ISO KERN	 €
TE 1250-0.1F.	100 | 1250	0,1 | 1	Coatings on steel and iron	Convex: 1,5 Concave: 25	**325,-**	961-110	120,-
TE 1250-0.1N.	100 | 1250	0,1 | 1	Insulation coatings on non-magnetic metals	Convex: 3 Concave: 50	**360,-**	961-110	120,-
TE 1250-0.1FN.	100 | 1250	0,1 | 1	Combination instrument: F, N	see F / N	**415,-**	961-112	170,-

SAUTER TF

SAUTER TG

Premium measuring devices for paint coating, lacquer coating etc.

Features

- 1 LCD display, backlit, display of all information at a glance
- **Offset-Accur:** This function allows you to adjust the instrument precisely to the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- **Scan mode** allows continuous measurement or single point measuring mode
- **Mini Statistics Kit:** displays the measured result, the average value and the max and the min value
- **Internal memory** up to 99 values
- Selectable measuring units: µm, inch (mil)
- **Base plate and calibration foils** included
- **Data interface RS-232** standard
- 2 Delivered in a hard carrying case

SAUTER TG:

- **External sensor** for difficult-to-access measurements

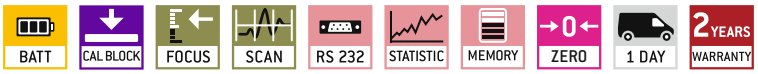
Technical data

- Precision:
  - Standard: 3 % of measured value or ± 2,5 µm
  - Offset-Accur: 1 % of measured value or ± 1 µm
- Minimal base thickness: 0,3 mm
- Dimensions LxWxH 126x65x35 mm
- Battery operation, batteries standard (2 x 1.5 V AAA)
- Net weight approx. 81 g

Accessories

- **Data transfer software** interface cable included, SAUTER ATC-01, **€ 80,-**

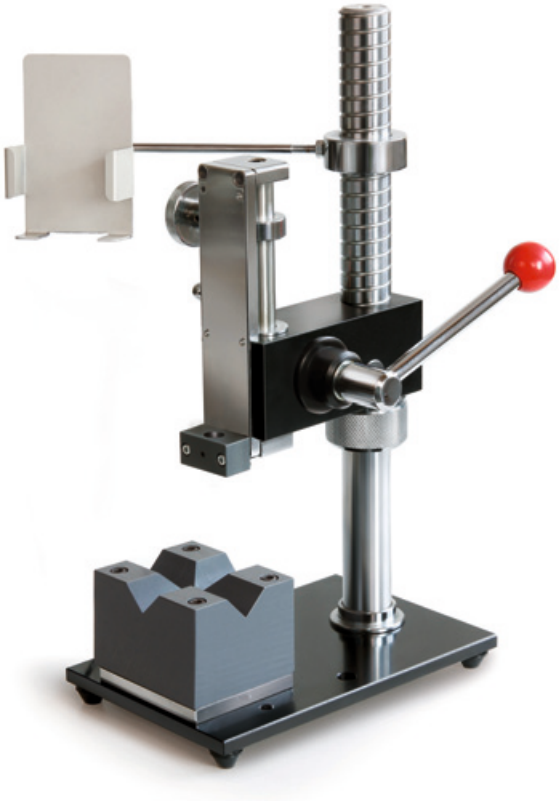
STANDARD



OPTION

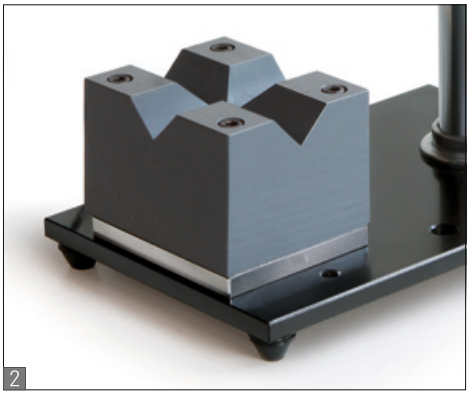
Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object	Smallest sample surface (radius) mm	Price excl. of VAT ex works €	Option DKD Calibr. Certificate ISO KERN	 €
TF 1250-0.1FN.	100 | 1250	0,1 | 1	Combination instrument: F/N	F: Convex: 1,5 | Concave: 25 N: Convex: 3 | Concave: 50	**480,-**	961-112	170,-
TG 1250-0.1FN.	100 | 1250	0,1 | 1	Combination instrument: F/N		**480,-**	961-112	170,-

Manual test stand SAUTER TJ



NEW

1



2

Lever test stand for measuring the thickness of layers, in particular of round objects

Features

- 1 Suitable for all SAUTER measuring devices for layer thickness with external sensor, such as for example SAUTER TG 1250-0.1FN. (not included)
- Serves to increase the measurement precision through controlled handling
- 2 In particular with round objects this test stand, with its contoured bracket, offers a more secure base for more accurate measurement results
- Layer thickness measurements are typically carried out to an accuracy level of 1 µm, which is 0.001 mm. When doing this, slight movements or changes in angle when guiding the sensor can cause significant distortion of the measurement result
- These distortions are often unavoidable and can only be compensated for by repeating the operation many times
- The SAUTER lever test stand TJ guarantees reliable measurements because the sensor is guided properly
- Your advantage: The bracket for the sensor is fitted with two seperate screws
- Furthermore, for the SAUTER measuring device for layer thickness with external sensors, the spring function for sensor security can be kept in the teststand - if adjusted precisely

Technical data

- Maximum test object height: 300 mm
- Net weight approx. 10,5 kg
- Overall dimensions WxDxH 150x233x420 mm

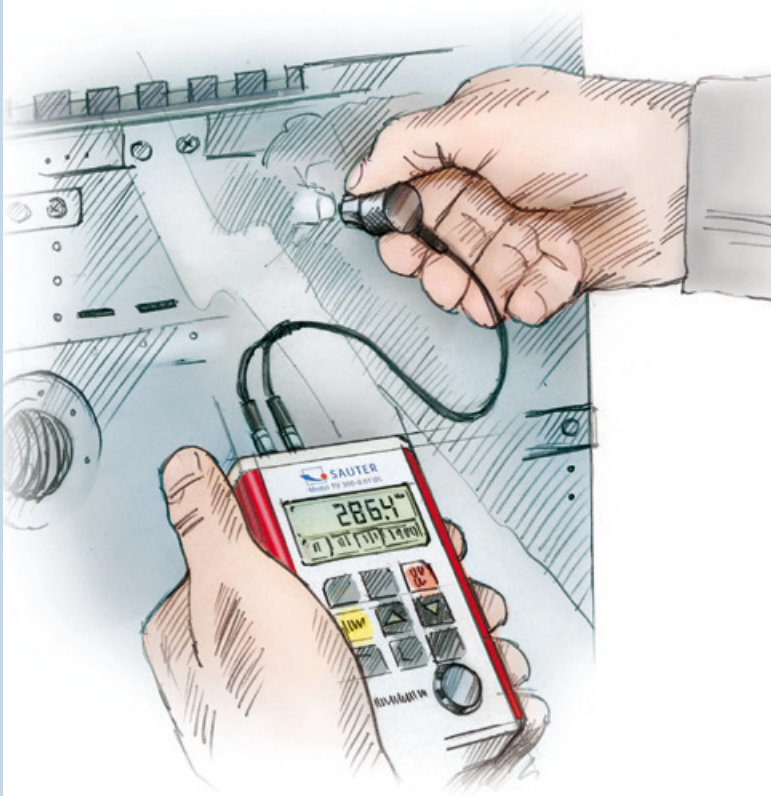
STANDARD

FAST-MOVE | 1 DAY | 2 YEARS WARRANTY

Model **SAUTER**	Maximum carriage height above base plate mm	**Price** excl. of VAT ex works **€**
TJ	318	**580,-**

4 Wall thickness measurement

SAUTER Model		Page
TB-US	Your reliable worktool for every day: light, easy, precise	40
TD-US	Compact thickness gauge with external sensor	41
TN-US	Hand-held material thickness gauge	42
TU-US	Premium ultrasonic thickness gauge	43
TD-GOLD 40	Ultrasound measuring instrument for testing the authenticity of gold	44



In cases, where the walls of the item to be measured are not accessible for traditional calliper gauges, the ultrasonic measuring equipment can be used.

This measurement is based on the following principle: Ultrasonic waves are directed onto one side of the material to be measured. They move with a defined speed through the material and are reflected on the other side. The measuring device measures the time required to do this and with this, calculates the thickness of the material.

In this way, you can determine the wall thickness of, for example, ships' hulls, pipes, tanks and components in plants or machines.

Ultrasonic measuring equipment can be used to measure all hard and homogeneous materials, such as metal, glass and hard plastics. This method cannot be used to measure materials such as, for example, concrete, asphalt or wood.

Quick-Finder
Wall thickness measurement

Read-out [d] mm	Measuring range [Max] mm	Sensor	Model SAUTER	Price € excl. of VAT ex works	Page
0,01	80	7 MHz / 6 mm	**TN 80-0.01 US.**	**575,-**	42
0,01	80	7 MHz / 6 mm	**TU 80-0.01 US.**	**1090,-**	43
0,01	230	5 MHz / 10 mm	**TN 230-0.01 US.**	**575,-**	42
0,01	230	5 MHz / 10 mm	**TU 230-0.01 US.**	**1090,-**	43
0,01	300	2,5 MHz / 14 mm	**TN 300-0.01 US.**	**675,-**	42
0,01	300	2,5 MHz / 14 mm	**TU 300-0.01 US.**	**1190,-**	43
0,1	80	7 MHz / 6 mm	**TN 80-0.1 US.**	**525,-**	42
0,1	200	5 MHz / 8 mm	**TB 200-0.1 US-RED.**	**270,-**	40
0,1	200	5 MHz / 8 mm	**TB 200-0.1 US.**	**320,-**	40
0,1	225	5 MHz / 8 mm	**TD 225-0.1 US.**	**330,-**	41
0,1	230	5 MHz / 10 mm	**TN 230-0.1 US.**	**525,-**	42
0,1	300	2,5 MHz / 14 mm	**TN 300-0.1 US.**	**620,-**	42

Do you have questions about SAUTER wall thickness measurement?

Your SAUTER product specialist will be pleased to help:

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Ultrasonic thickness gauge SAUTER TB-US

1

04

Your reliable worktool for every day: light, easy, precise

Features

- **External sensor** for difficult-to-access measurements
- **Base plate for calibration** included
- 1 Delivered in a hard carrying case
- **Auto-Power-Off**
- Selectable measuring units: mm, inch
- TB 200-0.1US-RED. can only analyse these materials: cast iron, aluminium, copper, brass, zinc, quartz glass, polyehylene, PVC, grey cast iron, nodular cast iron

Technical data

- Precision: 0,5 % of [Max]
- Dimensions LxWxH 161x69x32 mm
- Battery operation, batteries standard (4 x 1.5 V AA)
- Net weight approx. 0,3 kg

Accessories

- **External sensor**, 5 MHz, Ø 6 mm, for thin test materials: measuring range (steel) 1 - 50 mm, SAUTER ATB-US01, **€ 190,-**
- **External sensor**, 5 MHz, Ø 12 mm, for hot test materials: Measuring range (steel) 1 - 225 mm at normal temperatures, 4 - 100 mm at temperatures of up to 300 °C, SAUTER ATB-US02, **€ 295,-**
- **External sensor**, 7 MHz, Ø 6 mm, for thin test materials: Measuring range 0,75 - 80 mm (steel), SAUTER ATU-US02, **€ 95,-**
- **External sensor**, 5 MHz, Ø 10 mm, SAUTER ATU-US09, **€ 95,-**
- **External sensor**, 5 MHz, Ø 8 mm, SAUTER ATB-US06, **€ 85,-**
- **5 calibration blocks**, steel, 20, 50, 100, 200, 300 mm, SAUTER ATU-09, **€ 975,-**

STANDARD

OPTION

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec	**Price** excl. of VAT ex works €	Option **ISO Calibr. Certificate** ISO KERN	 €
TB 200-0.1US.	1 - 200	0,1	5 MHz | Ø 8 mm	500 - 9000	**320,-**	961-113	120,-
TB 200-0.1US-RED.	1 - 200	0,1	5 MHz | Ø 8 mm	–	**270,-**	961-113	120,-

Ultrasonic thickness gauge SAUTER TD-US

1

2

Compact thickness gauge with external sensor

Features

- **External sensor** for difficult-to-access measurements
- **Data interface RS-232** included
- **Base plate for calibration** included
- 1 Delivered in a hard carrying case
- Selectable measuring units: mm, inch

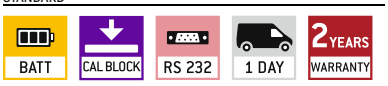
Technical data

- Precision: 0,5 % of [Max] + 0,1
- Dimensions LxWxH 120x65x30 mm
- Battery operation, batteries standard (4 x 1.5 V AAA), AUTO-OFF function to preserve the batteries
- Net weight approx. 0,164 kg

Accessories

- **Software**, interface cable included, SAUTER ATD-01, **€ 80,-**
- **External sensor**, 6 MHz, Ø 6 mm, for thin test materials: Measuring range (steel) 1 - 50 mm, SAUTER ATB-US01, **€ 190,-**
- **External sensor**, 5 MHz, Ø 12 mm, for hot test materials: Measuring range (steel) 1 - 225 mm at normal temperatures, 4 - 100 mm at temperatures of up to 300 °C, SAUTER ATB-US02, **€ 295,-**
- **External sensor**, 7 MHz, Ø 6 mm, SAUTER ATU-US02, **€ 95,-**
- **External sensor**, 5 MHz, Ø 10 mm, SAUTER ATU-US09, **€ 95,-**
- **External sensor**, 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 95,-**
- 2 **5 calibration blocks**, steel, 20, 50, 100, 200, 300 mm, SAUTER ATU-09, **€ 975,-**

STANDARD



OPTION

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec	**Price** excl. of VAT ex works €	Option **ISO Calibr. Certificate** ISO KERN	 €
TD 225-0.1US.	1,2 - 225	0,1	5 MHz | Ø 8 mm	500 - 9000	**330,-**	961-113	120,-

Ultrasonic thickness gauge SAUTER TN-US

1

04

Hand-held material thickness gauge

Features

- **External sensor**
- **Data interface RS-232**, standard (only for models with readout d = 0,01 mm)
- 1 Delivered in a hard carrying case
- **Scan mode** (10 measurements per sec.) or single point measuring mode possible
- **Internal memory** for up to 20 files (with up to 100 values per file)
- Selectable measuring units: mm, inch

Technical data

- Precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions LxWxH 150x74x32 mm
- Battery operation, batteries standard (2 x 1.5 V AA), AUTO-OFF function to preserve the batteries
- Net weight approx. 245 g

Accessories

- **Data transfer software**, interface cable included, SAUTER ATU-04, **€ 95,-**
- **External sensor**, 2,5 MHz, Ø 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3 - 300 mm (steel), SAUTER ATU-US01, **€ 185,-**
- **External sensor**, 7 MHz, Ø 6 mm, for thin test materials: Measuring range 0,75 - 80 mm (steel), SAUTER ATU-US02, **€ 95,-**
- **External sensor**, 5 MHz, Ø 12 mm, for hot test materials: Measuring range (steel) 3 - 200 mm at temperatures of up to 300 °C, SAUTER ATB-US02, **€ 295,-**
- **External sensor**, 5 MHz, Ø 10 mm, SAUTER ATU-US09, **€ 95,-**
- **External sensor**, 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 95,-**
- **External sensor**, 6 MHz, Ø 6 mm, for thin test materials: Measuring range (steel) 1 - 50 mm, SAUTER ATB-US01, **€ 190,-**
- **Thermal printer**, SAUTER ATU-05, **€ 355,-**
- **5 calibration blocks**, steel, 20, 50, 100, 200, 300 mm, SAUTER ATU-09, **€ 975,-**

STANDARD

OPTION

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec	**Price** excl. of VAT ex works €	Option **ISO Calibr. Certificate** ISO KERN	 €
TN 80-0.1US.	0,75 - 80	0,1	7 MHz | Ø 6 mm	1000 - 9999	**525,-**	961-113	120,-
TN 230-0.1US.	1,2 - 230	0,1	5 MHz | Ø 10 mm	1000 - 9999	**525,-**	961-113	120,-
TN 300-0.1US.	3 - 300	0,1	2,5 MHz | Ø 14 mm	1000 - 9999	**620,-**	961-113	120,-
TN 80-0.01US.	0,75 - 80	0,01	7 MHz | Ø 6 mm	1000 - 9999	**575,-**	961-113	120,-
TN 230-0.01US.	1,2 - 200 | 230	0,01	5 MHz | Ø mm	1000 - 9999	**575,-**	961-113	120,-
TN 300-0.01US.	3 - 200 | 300	0,01	2,5 MHz | Ø 14 mm	1000 - 9999	**675,-**	961-113	120,-

Ultrasonic thickness gauge SAUTER TU-US

1

2

3

Premium ultrasonic thickness gauge

Features

- **External sensor** for difficult-to-access measurements
- **Base plate for calibration** included
- 1 **Data interface RS-232**
- 2 Delivered in a hard carrying case
- **Scan mode** (10 measurements per sec.) or single point measuring mode possible
- **Internal memory** for up to 20 files (with up to 100 values per file)
- **Function to set limits:** Programmable high / low setpoints for go/no-go testing. Light and sound signal output
- Selectable measuring units: mm, inch

Technical data

- Precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions LxWxH 132x76x32 mm
- Battery operation, batteries standard (2 x 1.5 V AA)
- Net weight approx. 345 g

Accessories

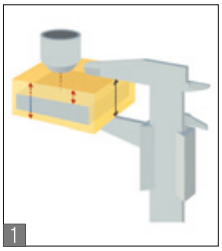
- **Software**, interface cable included, SAUTER ATU-04, **€ 95,-**
- **External sensor**, 2,5 MHz, Ø 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3 - 300 mm (steel), SAUTER ATU-US01, **€ 185,-**
- **External sensor**, 7 MHz, Ø 6 mm, for thin test materials: Measuring range 0,75 - 80 mm (steel), SAUTER ATU-US02, **€ 95,-**
- **External sensor**, 5 MHz, Ø 12 mm, for hot test materials: Measuring range (steel) 3 - 200 mm at temperatures of up to 300 °C, SAUTER ATB-US02, **€ 295,-**
- **External sensor**, 5 MHz, Ø 10 mm, SAUTER ATU-US09, **€ 95,-**
- **External sensor**, 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 95,-**
- **External sensor**, 6 MHz, Ø 6 mm, for thin test materials: Measuring range (steel) 1 - 50 mm, SAUTER ATB-US01, **€ 190,-**
- 3 **Thermal printer**, SAUTER ATU-05, **€ 355,-**
- **5 calibration blocks**, steel, 20, 50, 100, 200, 300 mm, SAUTER ATU-09, **€ 975,-**

STANDARD: BATT · CAL BLOCK · TOL · MEMORY · RS 232 · ZERO · 1 DAY · 2 YEARS WARRANTY

OPTION: SOFTWARE · ISO +4 DAYS

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec	**Price** excl. of VAT ex works €	Option **ISO Calibr. Certificate** ISO KERN	 €
TU 80-0.01US.	0,75 - 80	0,01	7 MHz | Ø 6 mm	1000 - 9999	**1090,-**	961-113	120,-
TU 230-0.01US.	1,2 - 230	0,01	5 MHz | Ø 10 mm	1000 - 9999	**1090,-**	961-113	120,-
TU 300-0.01US.	3 - 300	0,01	2,5 MHz | Ø 14 mm	1000 - 9999	**1190,-**	961-113	120,-

Gold tester SAUTER TD-GOLD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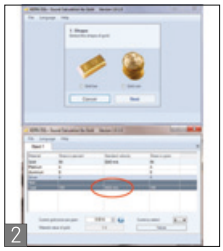
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04

Ultrasound measuring instrument for testing the authenticity of gold

Features

- You can use the TD-GOLD to determine whether gold bars and coins are genuine or whether they contain a core of different material
- The instrument measures the thickness of gold bars and gold coins using ultrasound
- 1 Process: Ultrasound waves are directed onto the test object using a sensor. The waves penetrate the test object, are then reflected from a surface opposite of the object and then picked up again by the sensor. The measurement determined by this process will be compared with the material thickness as measured by a traditional calliper gauge. On the basis of the measurement given, false cores (Figure: grey) such as, for example, those made of tungsten, lead, etc. can be easily identified, as the ultrasound reacts differently, compared with pure gold
- 2 Using the KERN SSG software (included), you can determine whether the test item is genuine or contains a false core - and you can be very confident of the result
- Known additions in tested gold items - e. g. copper or silver - are compensated by the software
- In addition, the software determines the value of the gold item. The price of gold is polled on line continuously
- It is the only test process which measures right through the whole bar or the whole coin without interference and thereby guarantees the highest level of certainty
- Base plate for calibration included
- 3 Delivered in a hard carrying case

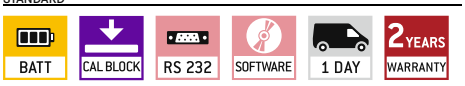
Technical data

- Battery operation, batteries standard (4 x 1,5 V AAA)
- Dimensions WxDxH 120x62x30 mm
- Net weight approx. 0,2 kg
- Permissible ambient temperature 15 °C / 35 °C

Accessories

- 4 **Calliper gauge** to determine the comparative material thickness , SAUTER LC 150, **€ 65,-**
- **Ultrasound contact gel**, 60 ml, SAUTER ATB-US03, **€ 30,-**

STANDARD



OPTION

Model **SAUTER**	Measuring range [Max] mm	Readout [d] mm	**Price** excl. of VAT ex works **€**	Option **ISO Calibr. Certificate** **ISO** KERN	 €
TD GOLD 40.	22,5	0,01	**450,-**	961-113	120,-

5 Hardness testing of plastics (SHORE)

SAUTER Model		Page
HB	Compact handheld durometer with drag indicator	46
TI	Lever operated test stand for hardness testing with base plate made out of glass	47

To determine the hardness of plastics, in 1915 Albert Shore developed an extremely simple process: A pin made of hardened metal and of a defined shape is held by a spring and is then pushed into the test item. Depending on the depth of the penetration, the material tested is either harder or softer. This method has been adopted in the DIN standards 53505 and 7868.

Currently, there are two types of devices used for this test: Mechanical measuring devices with drag indicator and electronic measuring devices.

Mechanical measuring devices (such as the SAUTER HB series) have the advantage that they can be operated with test stands (such as the SAUTER TI series). With a test stand, measurements can be carried out more consistently and accurately.

At this time, KERN does not calibrate Shore hardness testing instruments. As an alternative, we recommend that the measuring device is operated with a calibrated kit of test plates (such as SAUTER AHBA 01).

Quick-Finder Hardness testing of plastics (SHORE)

Readout [d] Hx	Measuring range [Max] Hx	Type of indenter	**Model** **SAUTER**	**Price €** excl. of VAT ex works	Page
1 HA	100 HA	A	**HBA 100-0.**	**95,-**	46
1 HC	100 HC	C/0	**HB0 100-0.**	**125,-**	46
1 HD	100 HD	D	**HBD 100-0.**	**130,-**	46

Do you have questions about SAUTER hardness testing of plastics?

Your SAUTER product specialist will be pleased to help:

Taras Mikitisin
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Fax +49-(0) 74 33-99 33-29143
Mobil: +49-(0)171-5590115
mikitisin@kern-sohn.com

Analogue Shore hardness tester SAUTER HB

1

2

3

Compact handheld durometer with drag indicator

Features

- Typical application: measurement of penetration (Shore)
- Particularly recommended for internal comparison measurement. Standard calibrations e.g. to DIN 53505 are often not possible because of very narrow standard tolerances
- Shore A: rubber, elastomers, neoprene, silicone, vinyl, soft plastics, felt, leather and similar material
- Shore D: plastics, formica, epoxides, plexiglass etc.
- Shore A0: foam, sponge etc.
- **Max mode:** Holds the maximum value in the display
- **Point mode:** Shows one instant value
- Can be attached to the test stands SAUTER TI-AC. (for Shore A and A0), TI-D. (for Shore D)
- 1 Delivered in a wooden carrying case

Technical data

- Precision: 3 % of [Max]
- Dimensions LxWxH 115x60x25 mm
- Net weight approx. 160 g

Accessories

Shore comparison plates for testing and calibration of Shore hardness testing devices. By regular comparisons the measuring accuracy increases significantly.

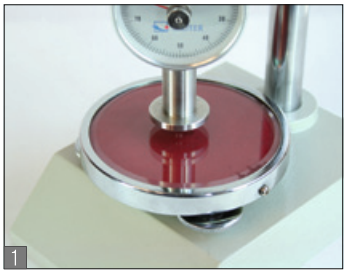
- 2 **7 calibration plates** for Shore A (36, 42, 55, 67, 75, 85, 94 HA), Tolerance up to ± 2 HA, SAUTER AHBA-01, **€ 95,-**
- 3 **3 calibration plates** for Shore D (33, 49, 92 HD), Tolerance up to ± 2 HD, SAUTER AHBD-01, **€ 75,-**
- **Optional ISO calibration of the comparison plates**, KERN 961-170, **€ 95,-**

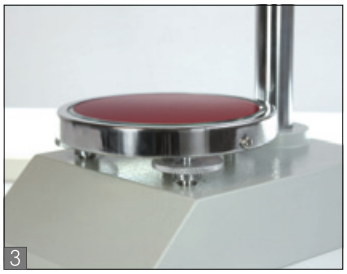
STANDARD

PEAK | 1 DAY | 2 YEARS WARRANTY

Model **SAUTER**	Hardness type	Measuring range [Max]	Readout [d]	**Price** excl. of VAT ex works **€**
HBA 100-0.	Shore A	100 HA	1,0 HA	**95,-**
HB0 100-0.	Shore A0	100 HA0	1,0 HA0	**125,-**
HBD 100-0.	Shore D	100 HD	1,0 HD	**130,-**

Manual shore test stand SAUTER TI





Features

- For Shore hardness testing of plastics, leather etc.
- 1 **Glass plate:** Providing a higher base hardness and superior accuracy
- 2 **Mechanical construction:** Robust design for precise measuring
- 3 **Level adjustment**: For the precise levelling of the base plate blate
- **Adjustable base plate** for the correction of inhomogeneous test objects
- Operation:
  1. The SAUTER hardness testing device HB is fitted in a suspended position
  2. 3. By lowering the handle lever, the measurement instrument is pressed in a controlled manner into the test object
- The accuracy of the displayed result is approx. 25 % higher than in a manual operated test

Technical data

- Stroke length: 15 mm
- Maximum test object height: 63 mm
- Base plate Ø 75 mm
- Overall dimensions LxWxH 150x110x250 mm
- Net weight approx. 8,5 kg

05

Lever operated test stand for hardness testing with base plate made out of glass

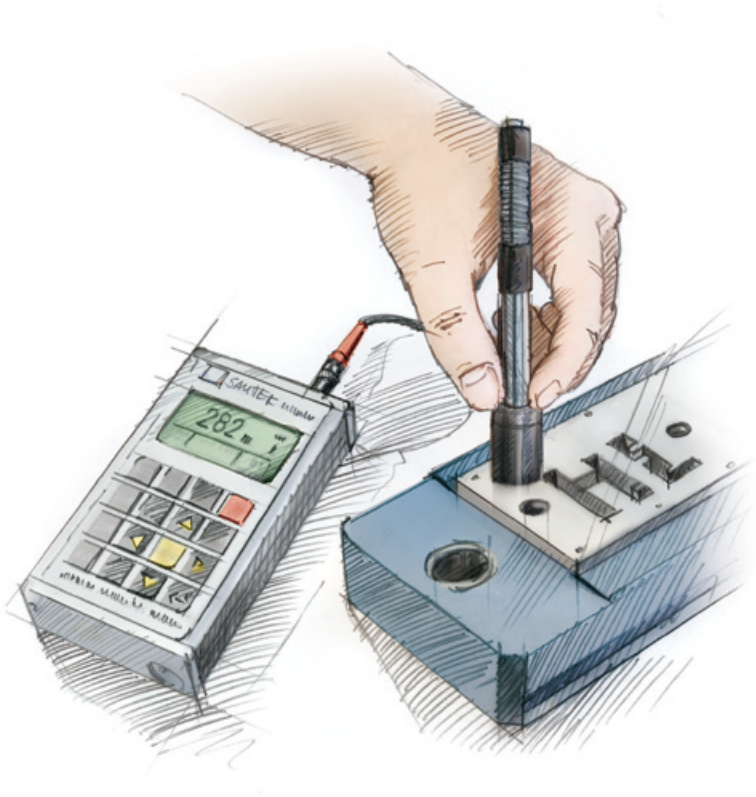
STANDARD

FAST-MOVE | 1 DAY | 2 YEARS WARRANTY

Model SAUTER	Suitable for	Price excl. of VAT ex works €
TI-A0	HBA, HB0	210,-
TI-D.	HBD	260,-

6 Hardness testing of metals (LEEB)

SAUTER Model		Page
HK-D	Premium durometer for hardness testing of metals	49
HMM	Advanced features for demanding applications	50/51
HMO	Advanced features for professional applications	52/53
HN-D	Easy and mobile handling, providing precise measurement results	54



Determining the hardness of metals is of particular significance during the preparation and use of metallic materials. Traditionally, hardness is determined using test machines in accordance with Vickers, Rockwell or Brinell.

Since 1978, a rebound test was used for the first time for mobile measuring, in accordance with Dietmar Leeb. To do this, a standardised impact body (such as, for example SAUTER AHMO D01) is driven against the item to be tested. The rebound of the impact body leads to a deformity of the upper surface, which results in a loss of kinetic energy. This loss of energy is determined by the measuring the speed and this is then used to calculate the Leeb (HL) hardness value.

These measuring devices can be used in any location. Usually they are equipped with a large internal data memory, which allows you to record the measurements at goods inwards or in production.

Our range has compact measuring devices of the so-called „Pen Type“ (HN-D) or measuring devices with external sensors connected by cables.

Quick-Finder
Hardness testing of metals

Readout [d] HL	Sensor	**Model SAUTER**	**Price €** excl. of VAT ex works	Page
1	D	**HN-D.**	**1190,-**	54
1	D	**HK-D**	**1240,-**	49
1	D	**HMM**	**1390,-**	50/51
1	D	**HMO**	**1690,-**	52/53

Do you have questions about SAUTER hardness testing of metals?

Your SAUTER product specialist will be pleased to help:

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mikitisin@kern-sohn.com

Mobile Leeb hardness tester SAUTER HK-D

1

Premium durometer for hardness testing of metals

Features

- Measures all metal samples (> 3 kg, thickness > 8 mm)
- **Mobility:** The SAUTER HK-D. provides a professional and resilient measurement solution wherever required, i.e. production, product control etc.
- **Robust metal housing**
- **External impact sensor** standard (Type D)
- **Measurement value display:** Rockwell (Type A, B, C), Vickers (HV), Shore (HS), Leeb (HL), Brinell (HB)
- **Automatic unit conversion**: The measuring result is automatically converted into all specified hardness units
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- **Function to set limits**: Input of an upper/lower limit value. A visual and acoustic signal supports the measuring operation
- **Internal memory** for up to 600 data groups, with up to 32 values per group forming the average value of the group
- **Mini statistics function:** displays the measured result, the average value, the impact direction, date and time
- **Matrix display:** Backlit multi-function display for all relevant functions at a glance
- **Standard block for calibration** not included
- **USB interface**, included
- 1 Delivered in a hard carrying case

Technical data

- Precision: ± 1 % at 800 HLD
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Minimum sample thickness: 8 mm
- For further technical specifications on individual materials, please see www.kern-sohn.com
- Dimensions WxDxH 132x82x31 mm
- Permissible ambient temperature -10 °C / 40 °C
- Battery operation, batteries not standard (2 x 1,5 V AA), operating time approx. 100 h, AUTO-OFF function to preserve the batteries, battery level indicator
- Net weight approx. 0,45 kg

Accessories

- **Test block** Type D / DC, accuracy ≤ 4 HL, Ø 90 mm (± 1 mm), Net weight < 3 kg, hardness range
- 790 ± 40 HL, SAUTER AHMO D02, **€ 190,-**
- 630 ± 40 HL, SAUTER AHMO D03, **€ 190,-**
- 530 ± 40 HL, SAUTER AHMO D04, **€ 190,-**
- **ISO calibration certificate** for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 120,-**
- **Data transfer software** interface cable included, KERN SCD-4.0, **€ 150,-**
- **Attachment rings** for secure positioning, SAUTER AHMR 01, **€ 270,-**
- **Impact body** Type D, Net weight approx. 5,5 g, hardness ≥ 1600 HV, tungsten carbide, Impact ball Ø 3 mm, in accordance with the standard ASTM A956-02, SAUTER AHMO D01, **€ 115,-**
- **External impact sensor** Type C. Low energy sensor: 25% impact energy compared to type D, for testing tiny or light objects or the surface of hardened layer, SAUTER AHMR C, **€ 540,-**
- **External impact sensor** Type D, SAUTER AHMO D, **€ 285,-**
- **External impact sensor** Type D+15. Slim front section for holes, grooves or re-entrant surfaces, SAUTER AHMR D+15, **€ 540,-**
- **External impact sensor** Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, **€ 415,-**
- **External impact sensor** Type DL, for very narrow surfaces (Ø 4,5 mm), SAUTER AHMR DL, **€ 1330,-**
- **External impact sensor** Type G. High energy sensor: 900% impact energy compared to type D, SAUTER AHMR G, **€ 1330,-**

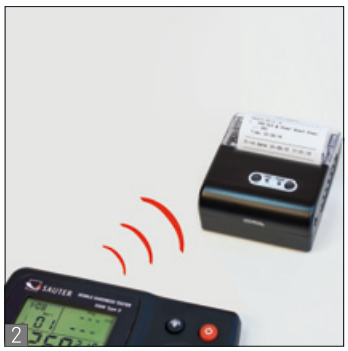
STANDARD: USB, UNIT, TOL, BATT, MEMORY, STATISTIC, 1 DAY, 2 YEARS WARRANTY

OPTION: SOFTWARE, CAL BLOCK, ISO +4 DAYS

Model SAUTER	Measuring range [Max] HL	Readout [d] HL	Sensor	Price excl. of VAT ex works €	Option ISO Calibr. Certificate ISO KERN	 €
HK-D	0 - 999	1	Type D	1240,-	961-131	120,-

Mobile Leeb hardness tester SAUTER HMM

Advanced features for demanding applications



Mobile Leeb hardness tester SAUTER HMM

Features

- 1 **Impact (rebound) sensor:** The bounce module is accelerated by a spring against the item being tested. Depending on how hard the object is, the kinetic energy of the module will be absorbed. The speed reduction will be measured and converted to Leeb hardness values.
- **External impact sensor** (Type D) included
- **Automatic recognition of the impact (rebound) sensor** connected to the HMM.
- **Mobility:** The SAUTER HMM. provides a professional and resilient measurement solution wherever required, i.e. production, product control etc.
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- **Data output to PC:** USB output included
- 2 **Wireless IR printer** included for on-site printing of measurement protocols (battery operated)
- 3 **Standard block and support ring** for curved surfaces (Radius > 10 mm)
- 4 Delivered in a hard carrying case
- **Internal memory** for up to 9 data groups, with up to 9 values per group forming the average value of the group
- **Mini statistics function**: Displays the measure value, the average value, the difference between the maximum and minimum values, date and time
- **Measurement value display**: Rockwell (B & C), Vickers (HV), Brinell (HB), Shore (HSD), Leeb (HL), tensile strength (MPa)
- **Automatic unit conversion**: The measuring result is automatically converted into all specified hardness units

Technical data

- Precision: 1 % at 800 HLD (± 6 HLD)
- Measuring range tensile strength: 375 - 2639 MPa (steel)
- Min. sample weight on a solid and stable support:
  Sensor D + DC: 3 kg
  Sensor G: 15 kg
- Minimum sample thickness:
  Sensor D + DC: 8 mm
  Sensor G: 10 mm
- Minimum sample radius (concave/convex): 50 mm
  (with support ring: 10 mm)
- Dimensions LxWxH 150x80x30 mm
- Mains adapter external standard
- Optional battery operation, batteries standard (3 x 1,5 V AAA), AUTO-OFF function to preserve the batteries, battery level indicator
- Net weight approx. 0,2 kg

Accessories

- 5 **External impact sensor** Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, **€ 415,-**
- **Attachment rings** for secure positioning, SAUTER AHMR 01, **€ 270,-**
- **Impact body**, SAUTER AHMO D01, **€ 115,-**

Measuring range hardness: HL with D Sensor (HLD): Min: 170 to Max: 960 HLD			
Material		Applied sensor D / DC	
		Min	Max
Steel and cast iron	**HRC**	19,8	68,5
	HRB	59,6	99,6
	HSD	26,4	99,5
	HB	140,0	651,0
	HV	83,0	976,0
Tool steel (coldwork steel)	**HRC**	21,0	67,0
	HV	80,0	900,0
Stainless steel	**HRB**	47,0	102,0
	HRC	20,0	62,0
	HB	85,0	655,0
	HV	85,0	802,0
Cast iron	**HB**	140,0	387,0
Nodular cast iron	**HB**	140,0	387,0
Cast aluminium alloys	**HB**	30,0	159,0
Brass (copper-zinc alloys)	**HB**	40,0	173,0
	HRB	13,5	95,3
Bronze (copper-aluminium-tin alloys)	**HB**	60,0	290,0
Wrought copper alloys	**HB**	45,0	315,0

STANDARD: BATT, 230 V, CAL BLOCK, MEMORY, STATISTIC, PRINT, USB

STANDARD: 1 DAY, 2 YEARS WARRANTY

OPTION: ISO +4 DAYS

Model / **SAUTER**	Readout [d] HL	Sensor	**Price** excl. of VAT ex works **€**	Option **ISO Calibr. Certificate** ISO KERN	€
HMM	1	D	**1390,-**	961-131	120,-

Mobile Leeb hardness tester SAUTER HMO

Advanced features for professional applications

06

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Mobile Leeb hardness tester SAUTER HMO

Features

- **Innovative touchscreen**
- **Automatic recognition of the impact (rebound) sensor** connected to the HMO.
- **Mobility:** The SAUTER HMO. provides a professional and resilient measurement solution wherever required, i.e. production, product control etc.
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- 1 **Data output to PC:** USB output included
- 2 **Wireless IR printer** included for on-site printing of measurement protocols (battery operated)
- 3 **Standard block and support ring** for curved surfaces (Radius > 10 mm)
- 4 Delivered in a hard carrying case
- **Internal memory** up to 800 values
- **Mini statistics function**: Displays the measurement value, the average value, the difference between the maximum and minimum values, date and time
- **Measurement value display**: Rockwell (B & C), Vickers (HV), Brinell (HB), Shore (HSD), Leeb (HL), tensile strength (MPa)
- **Automatic unit conversion**: The measuring result is automatically converted into all specified hardness units

Technical data

- Precision: 1 % 800 HLD (± 6 HLD)
- Measuring range tensile strength: 375 - 2639 MPa (steel)
- Min. sample weight on a solid and stable support:
  Sensor D + DC: 3 kg
  Sensor G: 15 kg
- Minimum sample thickness:
  Sensor D + DC: 8 mm
  Sensor G: 10 mm
- Minimum sample radius (concave/convex): 50 mm
  (with support ring: 10 mm)
- Dimensions LxWxH 135x83x24 mm
- Operation by rechargeable battery pack, operating time approx. 50 h, mains adapter included, AUTO-OFF function to preserve the batteries, charge indicator
- Net weight approx. 228 g

Accessories

- 5 **External impact sensor** Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, **€ 415,-**
- 5 **External impact sensor** Type G. High energy sensor: 900% impact energy compared to type D, SAUTER AHMO G, **€ 1700,-**
- **Support rings** for bended testing samples available on request, SAUTER AHMR 01, **€ 270,-**
- **Impact body**, SAUTER AHMO D01, **€ 115,-**

Measuring range hardness: HL with D Sensor (HLD): Min: 170 to Max: 960 HLD					
Material		Applied sensor			
		D/DC		G	
		Min	Max	Min	Max
Steel and cast iron	**HRC**	19,8	68,5	–	–
	HRB	59,6	99,6	47,7	99,9
	HSD	26,4	99,5	–	–
	HB	140,0	651,0	90,0	646,0
	HV	83,0	976,0	–	–
Tool steel (cold work steel)	**HRC**	19,8	68,0	–	–
	HV	80,0	900,0	–	–
Stainless steel	**HRB**	47,0	102,0	–	–
	HRC	20,0	62,0	–	–
	HB	85,0	655,0	–	–
	HV	85,0	802,0	–	–
Cast iron	**HB**	140,0	387	92,0	326,0
Nodular cast iron	**HB**	140,0	387,0	32,0	168,0
Cast aluminium alloys	**HB**	30,0	159,0	–	–
Brass (copper-zinc alloys)	**HB**	40,0	173,0	–	–
	HRB	13,5	95,3	–	–
Bronze (copper-aluminium-tin alloys)	**HB**	60,0	290,0	–	–
Wrought copper alloys	**HB**	45,0	315,0	–	–

STANDARD: ACCU, 230 V, CAL BLOCK, PRINT, USB, STATISTIC, TOL

STANDARD: 1 DAY, 2 YEARS WARRANTY

OPTION: ISO +4 DAYS

Model **SAUTER**	Readout [d] HL	Sensor	**Price** excl. of VAT ex works **€**	Option **ISO Calibr. Certificate** ISO KERN	€
HMO	1	D	**1690,-**	961-131	120,-

Mobile Leeb hardness tester SAUTER HN-D

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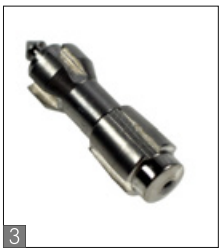
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5

“Pen type“ hardness testing device in accordance with Leeb testing for mobile hardness testing of metals

Features

- **User-friendly operation**: The compact version enables the product to be used in a significantly wider range of applications compared with traditional devices
- As the device can be operated using one hand only, the user can operate the device more quickly and use it in a more flexible way
- **Modern LCD display**: Optimised for industrial applications: increased luminosity and backlight can be switched on, so that the display can be read from any angle
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- **Internal impact sensor** included (Type D)
- Selectable measuring units: Rockwell (B & C), Vickers (HV), Brinell (HB), Shore (HSD), Leeb (HL)
- **Internal data memory** for up to 500 measurements with date and time
- **USB-PC data output**: Easy to install at any PC
- 1 Delivered in a hard carrying case

Technical data

- Accuracy ± 4 HLD
- Dimensions LxWxH 145x35x25 mm
- Operation by rechargeable battery pack, standard
- Mains adapter external standard
- Net weight approx. 0,07 kg

Accessories

- **PC software to download stored data**, for statistical evaluation, and transfer to MS Excel, SAUTER AHN-01, **€ 115,-**
- 2 **Attachment rings** for secure positioning, SAUTER AHMR 01, **€ 270,-**
- 3 **Impact body** Type D, Net weight approx. 5,5 g, hardness ≥ 1600 HV, tungsten carbide, Impact ball Ø 3 mm, in accordance with the standard ASTM A956-02, SAUTER AHMO D01, **€ 115,-**
- 4 **Test block** Type D / DC, accuracy ≤ 4 HL, Ø 90 mm (± 1 mm), Net weight < 3 kg, hardness range
  790 ± 40 HL, SAUTER AHMO D02, **€ 190,-**
  630 ± 40 HL, SAUTER AHMO D03, **€ 190,-**
  530 ± 40 HL, SAUTER AHMO D04, **€ 190,-**
- **ISO calibration certificate** for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 120,-**
- 5 **Thermal printer**, wireless infrared connection to SAUTER HN, HMM, HMO, SAUTER AHN-02, **€ 290,-**

Test block not included

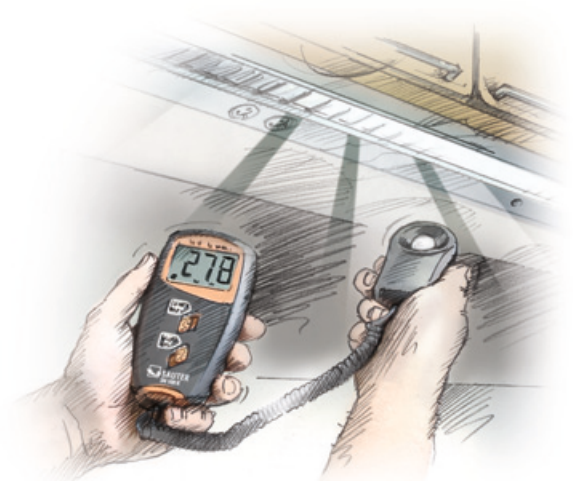
STANDARD

OPTION

Model SAUTER	Sensor	Measuring range [Max] HL	Readout [d] HL	**Price** excl. of VAT ex works €	Option **ISO Calibr. Certificate** ISO KERN	 €
HN-D.	D	0 - 999	1	**1190,-**	961-131	120,-

7 Environment / Occupational safety

SAUTER Model		Page
SO	Light measuring instrument for precise light measurement up to 200,000 Lux	56
SU	Professional sound level meter for measuring noise, class II	57



The prevention of accidents as well as modern health care have got the same operational starting point in many countries. With industrialisation and the development of cities, regular preventive medical examinations were introduced for wide sections of the population.

Up to now, occupational health and safety in the sense of accident prevention has - essentially - become a real part of operational responsibility.

Therefore, SAUTER has a complete package of general measuring equipment available. This can be used to measure environmental influences such as in particular, noise (acoustic pressure), light, force (physical loading) and temperature.

Furthermore we can offer you a practical carrying case, for a safe transport of all devices (MPS-A09).

For regular calibration you can use our pick-up and return service, which will save you a lot of effort and expenses.

Quick-Finder
Occupational safety/Environment

Readout [d]	Measuring range [Max]	Model SAUTER	Price € excl. of VAT ex works	Page
0,1|1|10|100 lux	200|2.000|20.000|200.000 lux	**SO 200K.**	**85,-**	56
0,1 db	30-130 db	**SU 130.**	**105,-**	57

Do you have questions about SAUTER occupational health and safety products?

Your SAUTER product specialist will be pleased to help:

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Light measuring instrument SAUTER SO

Light measuring instrument for precise light measurement up to 200,000 Lux

Features

- Measures illumination at the workplace
- Helps to determine whether a workstation has insufficient light or whether there is too much light
- Photo sensor: Silicone diode
- **Cosine correction** for light which falls at an angle
- **Sturdy protective cover** for the photo sensor
- **Increased service life**: Impact protection through a protective casing
- 1 Delivery in a robust box
- **TRACK function** for continuous recording of variable environmental conditions
- **HOLD function** to fix the current measured value
- **PEAK function** to capture peaks
- Selectable measuring units: fc (foot-candle), lx

Technical data

- Measuring frequency: 2 Hz
- Cable length (Photo sensor) approx. 1 m
- Dimensions WxDxH 100x60x28 mm
- Optional battery operation, battery not standard (9 V Block), AUTO-OFF function to preserve the battery
- Net weight approx. 250 g

07

STANDARD

OPTION

Model SAUTER	Measuring range [Max] lx	Readout [d] lx	Price excl. of VAT ex works €	Option ISO Calibr. Certificate ISO KERN	 €
SO 200K.	200	0,1	85,-	961-190	165,-
	2000	1			
	20000	10			
	200000	100			

Sound level meter SAUTER SU

Professional sound level meter, Class II

Features

- **Professional sound level meter** for measuring noise in areas such as, for example, the environment, mechanical applications, car industry and much more
- Measures the sound intensity in the workplace
- Helps in differentiating between normal noise influences, and excessive noise, e.g. in a production hall
- 1 **Data interface RS-232**, included
- 2 Delivered in a hard carrying case
- **Multi measuring functions:**
  Lp: Standard sound level measuring function
  Leq: Energy equivalent sound level measuring mode (type A)
  Ln: Shows the deviation from a pre-defined limit in %
- Selectable methods of evaluation:
  A: As sensitive as the human ear
  C: **Sensitive for noisier environmental conditions**, where there are machines, plant, motors etc.
  F: For areas where sound intensity does not vary
- **Function to set limits:** Programmable target value for go / no-go test values
- **TRACK function** for continuous recording of variable environmental conditions
- **Peak Hold Mode** to capture peaks
- **Internal memory** for measured values, for 30 measurements. Can be displayed on the PC

Technical data

- Dimensions WxDxH 236x63x26 mm
- Battery operation, batteries not standard (4 x 1.5 V AAA)
- Net weight approx. 170 g

Accessories

- **Data transfer software**, interface cable included, SAUTER ATC-01, **€ 80,-**
- **Adjustment device** for regular adjustment of the sound level meter, SAUTER ASU-01, **€ 155,-**

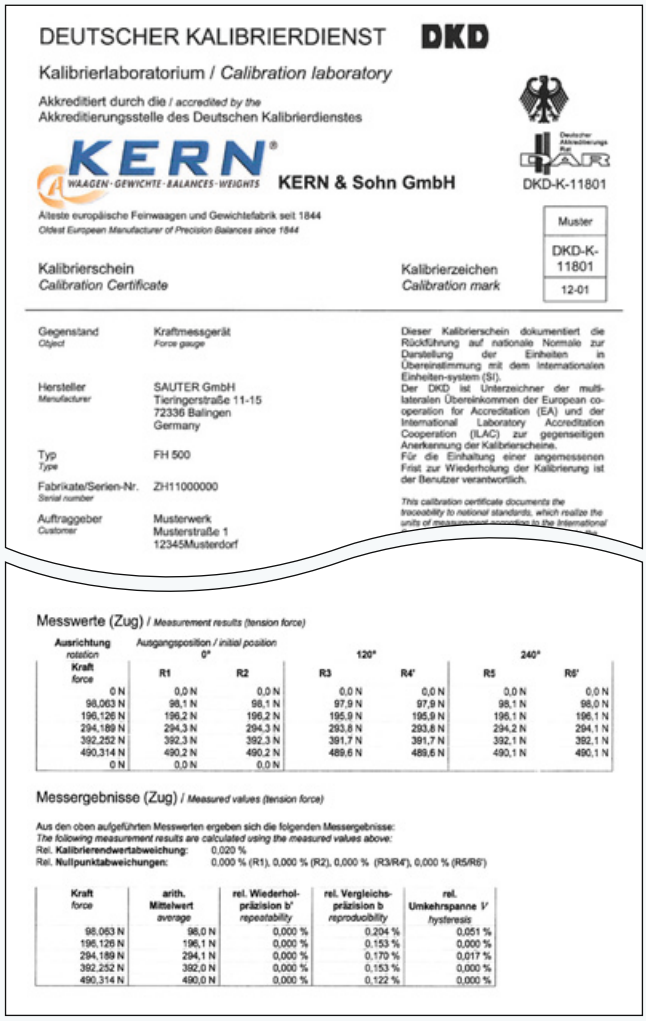
STANDARD

OPTION

Model SAUTER	Type	Measuring range dB	Readout dB	Price excl. of VAT ex works €
SU 130.	Lp A	30 - 130	0,1	105,-
	Lp C	35 - 130		
	Lp F	35 - 130		

DKD calibration certificate for balances (extract)

Further details on the internet www.kern-lab.com



DEUTSCHER KALIBRIERDIENST DKD

Kalibrierlaboratorium / *Calibration laboratory*

Akkreditiert durch die / *accredited by the*
Akkreditierungsstelle des Deutschen Kalibrierdienstes

KERN WAAGEN · GEWICHTE · BALANCES · WEIGHTS KERN & Sohn GmbH

DKD-K-11801

Älteste europäische Feinwaagen und Gewichtefabrik seit 1844
Oldest European Manufacturer of Precision Balances since 1844

Muster
DKD-K-11801
12-01

Kalibrierschein
Calibration Certificate

Kalibrierzeichen
Calibration mark

Gegenstand *Object*	Kraftmessgerät *Force gauge*
Hersteller *Manufacturer*	SAUTER GmbH Tieringerstraße 11-15 72336 Balingen Germany
Typ *Type*	FH 500
Fabrikate/Serien-Nr. *Serial number*	ZH11000000
Auftraggeber *Customer*	Musterwerk Musterstraße 1 12345Musterdorf

Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem internationalen Einheiten-system (SI).
Der DKD ist Unterzeichner der multilateralen Übereinkommen der European co-operation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine.
Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents the traceability to national standards, which realize the units of measurement according to the International

Messwerte (Zug) / *Measurement results (tension force)*

Ausrichtung *rotation*	Ausgangsposition / *initial position* 0°		120°		240°	
Kraft *force*	R1	R2	R3	R4'	R5	R6'
0 N	0,0 N	0,0 N	0,0 N	0,0 N	0,0 N	0,0 N
98,063 N	98,1 N	98,1 N	97,9 N	97,9 N	98,1 N	98,0 N
196,126 N	196,2 N	196,2 N	195,9 N	195,9 N	196,1 N	196,1 N
294,189 N	294,3 N	294,3 N	293,8 N	293,8 N	294,2 N	294,1 N
392,252 N	392,3 N	392,3 N	391,7 N	391,7 N	392,1 N	392,1 N
490,314 N	490,2 N	490,2 N	489,6 N	489,6 N	490,1 N	490,1 N
0 N	0,0 N	0,0 N				

Messergebnisse (Zug) / *Measured values (tension force)*

Aus den oben aufgeführten Messwerten ergeben sich die folgenden Messergebnisse:
The following measurement results are calculated using the measured values above:
Rel. **Kalibrierendwertabweichung:** 0,020 %
Rel. **Nullpunktabweichungen:** 0,000 % (R1), 0,000 % (R2), 0,000 % (R3/R4'), 0,000 % (R5/R6')

Kraft *force*	arith. Mittelwert *average*	rel. Wiederholpräzision b' *repeatability*	rel. Vergleichspräzision b *reproducibility*	rel. Umkehrspanne v' *hysteresis*
98,063 N	98,0 N	0,000 %	0,204 %	0,051 %
196,126 N	196,1 N	0,000 %	0,153 %	0,000 %
294,189 N	294,1 N	0,000 %	0,170 %	0,017 %
392,252 N	392,0 N	0,000 %	0,153 %	0,000 %
490,314 N	490,0 N	0,000 %	0,122 %	0,000 %

The advantages of using KERN in-house calibration

- **Quick calibration:** duration four working days only
- **Competence:** Laboratory meets the highest metrological standards (for mass)
- **Keeping recalibration calendar** for your individual instrument
- **Universal use:** Calibration possible for variety of instruments shown in catalogue

Recalibration

- **Typical industrial recalibration times** may be recommended as follows:

  - daily use (once or several times): Recalibration times: 12 months

  - weekly use (or less frequent use): Recalibration times: 24 months

- **Recalibration prices:** The prices for initial calibration and recalibration are identical (see the table shown here). Costs for cleaning or for the production of special holders to carry out the calibration will be calculated separately, if required.

Price Calibration

Reference number	Indicator	Measuring range	Price € excl. of VAT ex works
963-161	Force (DKD)	500 N (for tension)	250,-
961-161	Force (ISO)	0 – 500 N	135,-
961-162	Force (ISO)	0 – 2000 N	165,-
961-163	Force (ISO)	0 – 10 000 N	225,-
961-164	Force (ISO)	0 – 20 000 N	350,-
961-165	Force (ISO)	0 – 50 000 N	520,-
961-166	Force (ISO)	0 – 100 000 N	940,-
961-167	Force of MAP	0 – 130 kg	120,-
961-110	Coating thickness (ISO)	0 - 2000 µm F or N	120,-
961-112	Coating thickness (ISO)	0 - 2000 µm FN	170,-
961-113	Wall thickness ultra sound(ISO)	0 – 300 mm in stainless steel	120,-
961-114	Wall thickness for test blocks	0 – 300 mm	150,-
961-170	Hardness Shore (ISO)	For sets up to 7 plates	95,-
961-131	Hardness Leeb (ISO)	400 – 800 HLD	120,-
961-132	Hardness Leeb (ISO)	Test block for Leeb durometer	120,-
961-150	Length (ISO)	0 – 300 mm	120,-
961-120	Torque (ISO)	0 – 500 Nm	170,-
961-190	Light (ISO)	0 – 200 000 Lux	165,-
961-200	Sound level (ISO)	0 – 150 dBA	135,-
961-210	Temperature (ISO)	-18 bis + 60°C at 3 points	120,-
961-100	Mechanical balances/ Spring balances	≤ 5 kg	65,-
961-101	Mechanical balances/ Spring balances	> 5 kg - 50 kg	80,-
961-102	Mechanical balances/ Spring balances	> 50 kg - 350 kg	95,-
961-103	Mechanical balances/ Spring balances	> 350 kg - 1500 kg	150,-